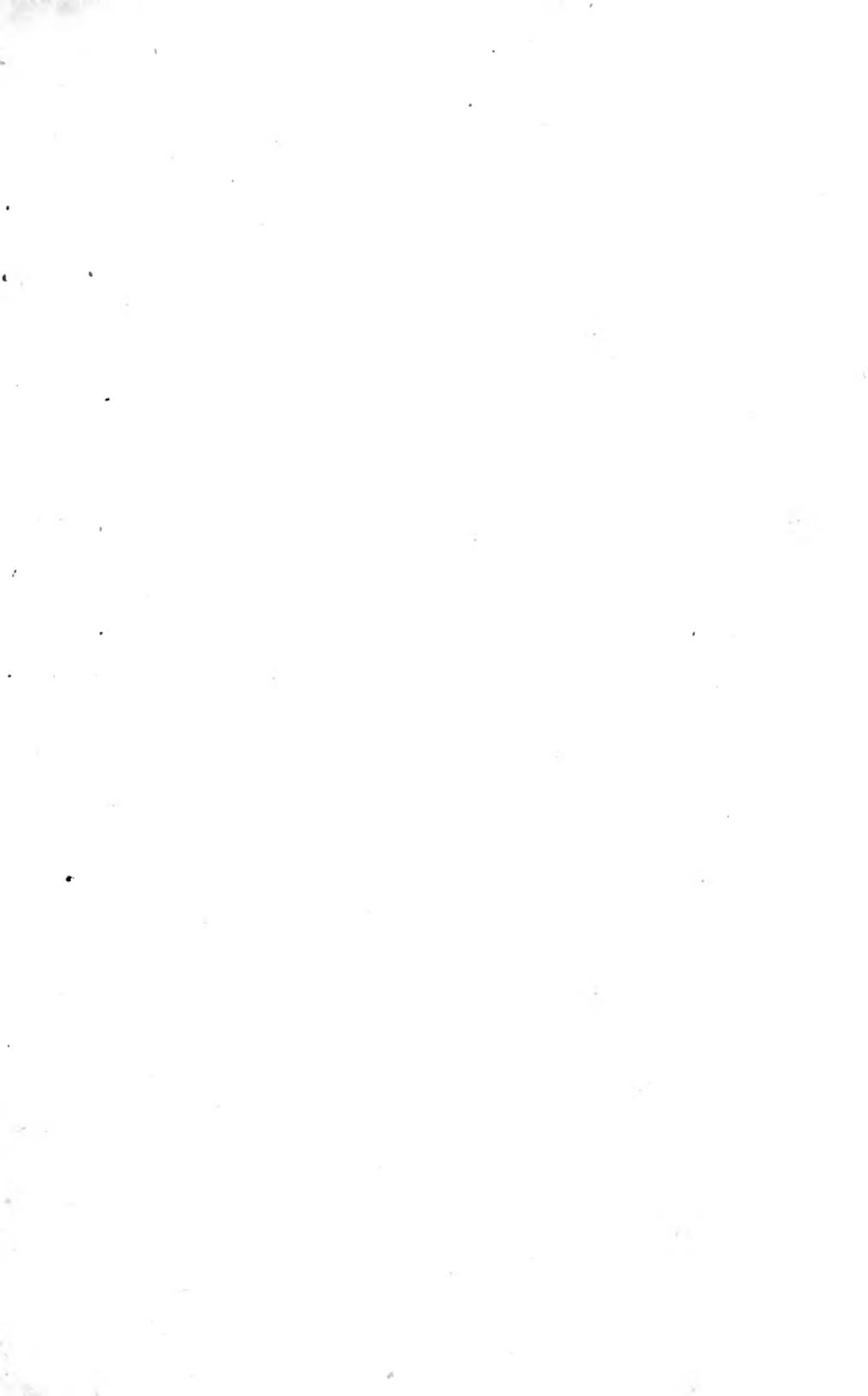


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THE
Z O O L O G I S T :
A
POPULAR MISCELLANY
OF
N A T U R A L H I S T O R Y.

CONDUCTED BY
EDWARD NEWMAN, F.L.S., MEMB. IMP. L.-C. ACAD.

VOLUME THE FOURTEENTH.



LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

Thanks be to Nature, some green spots remain
Free from the tread and stain of that gross world
Whose god is commerce, and religion gain—
Its altars furnaces, whose smoke is curled
Around the very clouds!—Be praise agen
To Nature and her God! while some are whirled
The dizzy round of joy, and some turn churled
Or fever'd from life's game,—to balm the pain
Of a stung heart—still the self-troubled brain—
Refine the mind—silence, if not appease,
Pale recollections, memory's agonies,
And throw the load of anxious cares behind,
There still are flowery meadows, pathless woods,
Groves, hills and vales, forests and solitudes.

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A D V E R T I S E M E N T.

The 'ZOOLOGIST' will be continued both as a Monthly and an Annual Publication. As a Monthly, it will contain thirty-two pages of letter-press, occasionally accompanied with illustrations engraved on wood; will be on sale two days before the end of every month; and will be charged One Shilling. As an Annual, it will be sold on or about the 1st of December; will contain twelve Monthly Numbers, bound and lettered uniformly with the present Volume; and will be charged Thirteen Shillings. An Alphabetical List, both of Contributors and Contents, will be published once in the year.

THE ZOOLOGIST

FOR 1856.

NOTICES OF NEW BOOKS.

'The Natural History of the Tineina.' Vol. I., containing *Nepticula*, Part I., and *Cemistoma*, Part I. By H. T. STANTON, assisted by PROFESSOR ZELLER and J. W. DOUGLAS. London: Van Voorst. Paris: Deyrolle. Berlin: Mittler and Son. 1855. Demy 8vo, 338 pp. letter-press; 8 coloured plates: price 12s. 6d.; to Subscribers 7s. 6d.

IT is difficult to realize the idea of a complete work of which an 8vo volume of 338 pages is but the tithe of a first instalment of an unlimited number of series. The most sanguine of entomologists will scarcely contemplate the possibility of living until the last volume of the last series shall be complete. It is not, however, the province of the reviewer to scan, through the telescope of imagination, the dim prospect of a far-off future: his part is to deal with the first volume of the first series just as it were the first, the last, and the only one. Viewed in this light, the present volume is most valuable; it gives us the histories of twenty-one species of *Nepticula* and three of *Cemistoma*; all of them patiently worked out and illustrated by excellent figures of the larva, food-plant and imago: there are, however, no figures of the pupa, and this I feel an omission: it is true they may be very similar in the several species, and this might be a sound argument for not repeating them—it is scarcely one for omitting them altogether. To myself it has always been a matter of regret that more attention was not paid to the preparatory states of all our insects: it is true that these states are often less enduring than the perfect insect; and it is also true that we are naturally apt to prefer the tangible and the visible: the acquisition and diffusion of knowledge for its own sake, and irrespective of all ulterior utilitarian objects,

are tastes confined to the few. Mr. Stainton is one of these; and it is also his constant aim to go to Nature herself as the fountain-head of such knowledge: for myself, I have long since learned that it is dangerous and inexpedient to elicit materials from any other source: frequently as the writings of others may guide us to the truth, they should be availed of simply as guides to the source, and not as the source itself: nothing should be substituted for personal observation, except when personal observation cannot be brought to bear. Mr. Stainton entertains and has often advanced these views, but it appears to me that he scarcely carries them out in that thorough-paced manner which he himself would recommend to the rising generation of naturalists. As an example: Degeer is an excellent guide, perhaps the very best in many cases, but it is making rather too free with this eminent naturalist to occupy so many pages with an extract from his description of *Nepticula anomalella*, an insect so abundant that, as Mr. Stainton observes, "if we examine our rose-bushes in the months of July and October we can hardly fail to observe on some of them that many of the leaves are marked with its 'pale serpentine tracks.'" Mr. Stainton evidently has all the materials for a history of the insects, and he is quite right in fairly acknowledging the value of Degeer's previous labours; but he need not have cited them either in addition to or in lieu of his own. There is a strong reason for noticing and even dwelling on this point, namely, that if we have each individual history thus doubly elaborated, the work becomes extended beyond the limits actually required to render the subject clear and intelligible; and the eventual completion of the work is indefinitely procrastinated.

The letter-press is in four languages, English, French, German and Latin, printed in four parallel columns, the object of which is to extend the circle of readers, and, as a consequence, the sphere of utility. I should demur to this expensive proceeding as unnecessary, believing English sufficient for ourselves and Latin for all other nations, did not the price at which the work is issued show that the author is totally regardless of pecuniary compensation; indeed we are told, and I readily believe it, that the plates alone absorb the entire price of the volume. This principle of ignoring profit seems to pervade the whole of Mr. Stainton's literary labours. We accept this as a generous act in each individual instance: we feel indebted to Mr. Stainton for selling us a handsome volume at the mere cost of colouring the plates; but how will it act hereafter? what effect will be produced by comparing this price with that of future works pub-

lished by entomologists who can neither give their time nor their money to the public?

These remarks are statistical, economical, general: now for a remark entomological. So little is known of the larvæ of our *Micros* in general, and of our *Nepticulæ* in particular, that the entomologist eagerly seizes on every scrap of information respecting them. I sought at once to devour and digest the store of facts which I expected to find recorded on these minims of Lepidoptera; but I rose from the investigation somewhat dissatisfied. My readers shall judge whether reasonably so. For the larvæ of the genus *Nepticula* Mr. Stainton gives this general definition:—

“The larvæ are especially distinguished by the absence of true horny legs, and the undeveloped condition of the membranous legs, which here serve alike for legs and prolegs, none having the coronet of little hooks; with the exception of the segment behind the head, and the anal segment, each segment bears a pair of these unusual legs, making eighteen in all, although the third pair are less developed than the others, and more easily overlooked.”—p. 2.

The word “distinguished” appears susceptible of improvement or qualification: they are distinguished from Macro-Lepidoptera by this character, but my eyes greatly deceive me if they are not by this very character associated with other mining *Micros*; but my objection is not confined to what may very possibly be a mere error in the choice of words. The criticism I am about to make touches a question of fact. Waiving the rule which I believe to be absolute, “that no winged insect can have more than six legs in any of its states,” I admit that these six may be entirely wanting, or may be reduced to so rudimentary a state as to assume the appearance of a mere point, or even of a fold in the skin; and I admit also that the ventral adhering disks may, like analogous disks on the head or throat of fishes, or like the prostrate belly of mollusks, serve the purpose of legs as far as regards prehension, and, in some degree, locomotion; nevertheless, experience teaches that there is an orderly disposition, a general rule, for the location of both disks and legs as regards the segments on which they may occur. The larvæ of Lepidoptera have thirteen segments; No. 1 is the head; Nos. 2, 3 and 4 bear the legs; No. 5 is without appendages; Nos. 6 to 12 bear the disks; and No. 13 has two appendages, infinitely various in structure and function in different genera and families. Now the disks are liable to disappear from, or to become rudimentary on, the 6th, 7th, 8th, 9th and 10th segments; but they are not liable to appear on the 5th, and the asser-

tion that legs or disks appear on this segment requires to be received, or rather to be scrutinized, with the greatest caution. It is somewhat remarkable that two only of the figures of larvæ represent them in a position to exhibit these anomalously placed legs or disks: these are the larvæ of *plagicolella* and *septembrella*, figs. 1 and 2 of Plate IV., and it is still more remarkable that these figures tally with my previously conceived opinion, and are at variance with Mr. Stainton's description: in both instances the fifth segment is represented as totally devoid of all appendages. The late William Wing—and it always gives me a melancholy pleasure to mention the name of that painstaking and amiable naturalist—was too accurate to have made an error in these instances, so that I cannot avoid the conclusion that Mr. Stainton's diagnosis requires revision.

In conclusion, I may sincerely say that, willing as I am to point out error, real or supposed,—to mention faults that I conceive to be susceptible of improvement,—I consider this first volume of the 'Natural History of the Tineina' to be a most valuable and praiseworthy production, and that its author is deserving of our warmest thanks.

'The Microscope, and its application to Vegetable Anatomy and Physiology.' By Dr. HERMANN SCHACHT. Edited by FREDERICK CURREY, M.A. Second Edition, considerably enlarged, with Numerous Illustrations. London: Highley, Fleet Street. 1855. Fcap. 8vo, 202 pp. letter-press, 130 woodcuts.

WE spoke so favourably of the first edition of this work that it were needless repetition to express a second time our opinion in its favour. The editor shall himself describe the difference between the second edition and the first.

"The rapid sale of the first edition of this translation has rendered a second necessary; and I wish to direct attention very briefly to the points in which the present edition differs from the preceding. Four chapters have been added at the beginning of the book; the first of which relates to some elementary principles of Optics essential to a proper comprehension of the Microscope; the second contains a description of different kinds of English Microscopes, including, as far as is necessary, the details of their different parts; the third contains an account of the accessory apparatus and chemical re-agents necessary for microscopical investigations in Botany; and the fourth relates to the preservation of specimens. I have myself added these Chapters, with a view of rendering the work more complete as a

Manual for English Students, and am, therefore, responsible for the contents of them, with the exception of the list of chemical re-agents in Chapter III., which is to be found in the original work. Besides the addition of the above four chapters, I have been furnished by Dr. Schacht with a quantity of new matter in manuscript, being the result of his investigations since 1852, and this new matter has been incorporated in the text; the present edition is, therefore, considerably in advance of the original work. At the suggestion of Dr. Schacht, I have added the Chapters IX., X. and XI., which contain an interesting account of the embryogeny of the Coniferæ, and are a translation of a portion of a work published by him in the course of last summer, entitled 'Beiträge zur Anatomie und Physiologie der Gewächse.' Chapters VII. and VIII. of the first edition, which related to drawing and to the preservation of objects, have been omitted; but the student will find what is necessary upon these points, under the head of 'Delineating Apparatus,' in Chapter III., and in Chapter IV., which treats of the preservation of specimens."

It will be observed that several chapters are now introduced which occupy an analogous position as regards the microscope to that existing between the Exhibition at Paris and the locomotive which drew us there: the microscope and the locomotive are the means, the structure of Coniferæ and the Exhibition are the ends. Notwithstanding this, we like the introduction of a scientific subject into a work of this kind; we commend every attempt to give a right direction to the microscopic mind, which is but too apt to degenerate into the mere curiosity-shop.

'A Handbook to the Marine Aquarium; containing Practical Instructions for Constructing, Stocking and Maintaining a Tank, and for collecting Plants and Animals.' By PHILIP HENRY GOSSE, A.L.S. London: Van Voorst. 1855. 12mo, 48 pp. letter-press: price 2s. 6d.

THIS little book is sufficiently explained by the preceding very comprehensive title and the following brief and explanatory preface:—

"The increasing popularity of the 'Marine Aquarium' demands a Handbook of Practical Instructions for establishing and maintaining it, and I am probably the most proper person to write such a book. Perhaps it might have been sufficient to refer inquirers to my volume on the subject; but the price of that work, arising mainly from the costliness of its illustrations, puts it beyond the power of many persons,

who yet desire to keep marine animals. The main portion of that volume is, moreover, occupied with the habits and manners of the tenants in [?] of an aquarium.

"The concluding chapter of that work has formed the ground of the present handbook. The whole, however, has been re-written, and copious additions have been made, bringing it up to the present state of our experience. The price at which it is issued will, it is hoped, bring it within the reach of all."

'Contributions to the Natural History of Labuan and the Adjacent Coasts of Borneo.' By JAMES MOTLEY, of Labuan, and LEWIS LLEWELLYN DILLWYN, F.L.S., &c. London: Van Voorst. 1855. Part I. Fcap. 4to, 62 pp. letter-press; 10 coloured plates.

THE objects and scope of this truly beautiful work are thus set forth in the prospectus:—

"The residence of Mr. Motley in Labuan affords himself and Mr. Dillwyn, the authors of the proposed 'Contributions,' an opportunity of making themselves acquainted with the natural products of that island; and believing that the nature of its Fauna is by no means thoroughly known to zoologists, and that the habits of the animals constituting that Fauna have been but little observed, and also considering that such information respecting them as they have already obtained, and shall probably again obtain, may prove an acceptable contribution to the science of Zoology, they are induced to offer to naturalists the forthcoming publication.

"It is intended that the 'Contributions' shall contain descriptions of such animals, both Vertebrate and Invertebrate, as inhabit the island; these will be accompanied with original notes on their habits and other particulars connected with their natural history. Illustrations will be given of such animals as it may appear to be desirable should be figured, of such more especially as are new, or of which figures are not easily obtainable. As it is expected that the work will extend over several parts, the contents of which must depend upon the specimens and notes from time to time obtained, it will be impossible to adopt any regular order of arrangement; it will, however, be the endeavour of the authors to make each part as complete in itself as the circumstances will admit of. It is hoped that two or three parts will be published annually. Each part will contain about five sheets of letter-press and ten or twelve coloured plates: the price will be 10s. 6d. Notes of interest which may be obtained subsequently to

the publication of any parts, and which refer to animals contained in them, will be given in the part next ensuing."

The contents of Part I. are as follows:—

Class MAMMALIA.—Order CHEIROPTERA, *Cynopterus Horsfieldii*. Order INSECTIVORA, *Sorex Grayii*. Order RODENTIA, *Pteromys melanopis*, *Sciurus vittatus*, *Sciurus modestus*, *Sciurus rufoniger*. Order RUMINANTIA, *Tragulus Kanchil*.

Class AVES.—Order RAPTORES, *Phodilus badius*. Order PASSERES, *Macropteryx Klecko*, *Macropteryx comatus*, *Hirundo pacifica*, *Eurystomus pacificus*, *Halcyon Chloris*, *Halcyon lilacina*, *Ceyx tridactyla*, *Merops badius*, *Nectarinia pectoralis*, *Nectarinia javanica*, *Nectarinia cingalensis*, *Dicæum croceoventer*, *Dicæum coccineum*, *Orthotomus sepium*, *Copsyphus Stricklandii*, *Motacilla cinereocapilla*, *Melacopteron coronatum*, *Pitta cyanoptera*, *Turdus modestus*, *Irena puella*, *Calornis Panayensis*, *Gracula javanensis*, *Amadina sinensis*. Order SCANSORES, *Palæornis malaccensis*, *Psittaculus galgulus*, *Megalaima versicolor*, *Hemilophus leucogaster*. Order COLUMBÆ, *Treron vernans*, *Carpophaga luctuosa*. Order GALLINÆ, *Megapodius Cumingii*. Order GRALLÆ, *Ardea purpurea*, *Ardea garzetta*.

Class REPTILIA.—Order SAURA, *Hydrosaurus Salvator*, *Tiliqua rufescens*, *Platyurus Schniderianus*, *Gecko monarchus*, *Draco volans*, *Gonycephalus chameleontina*, *Bronchocela cristatella*. Order OPHIDIA, *Trimesurus maculatus*, *Trimesurus subannulatus*, *Elaps furcatus*, *Dendrophis Paradisei*, *Dendrophis picta*, *Dryiophis prasina*, *Dipsas dendrophila*, *Dipsas fusca*, *Calamaria brachyorrhos*.

This summary is given to show the range of subjects treated of; each animal appears to be carefully described, and to almost every description is appended some account of the habits of the species: many of them are highly interesting. The coloured figures by Wolff and Ford are admirable. The work is fitted alike for the sanctum of the student and the table of the drawing-room. Now and then, when space can be found, an extract or two, touching the manners and customs of the Labuan animals, will be transferred to these pages.

‘*The Natural History Review.*’ No. VIII., dated October, 1855; price 2s. 6d. London: Highley.

THE following papers, read before Irish Societies, appear in the present number: the titles will sufficiently indicate that they have no especial bearing on Zoology:—

‘On the Advantage to Botany of Local Lists, and Notes with reference to the Algæ of the East Coast of Ireland.’ By Gilbert Saunders.

‘List of Marine Algæ collected at Skerries, near the Northern Limit of the proposed Dublin District, in the Summer of 1854.’ By Gilbert Saunders.

‘On the Effects of the Severe Frost on Plants in the Neighbourhood of Sligo.’ By the Right Hon. John Wynne.

‘Quarterly Journal of Microscopical Science, including the Transactions of the Microscopical Society of London.’ Edited by EDWIN LANKESTER, M.D., F.R.S., F.L.S., and GEORGE BUSK, F.R.C.S.E., F.R.S., F.L.S. London: Highley. No. XIII., dated October, 1855; price 4s.

THE contents of the October number are as follows:—

‘Notice of some New Species of British Freshwater Diatomaceæ.’ By William Carpenter, M.D., F.R.S.E.

‘An Account of the Structure and Relations of *Sagitta bipunctata*.’ By G. Busk, F.R.S.

‘On the Magnifying Power of Short Spaces, illustrated by the Transmission of Light through Minute Apertures.’ By John Gorham, M.R.C.S.E., &c.

‘Notes and Observations on the Sap-circulation of Plants.’ By F. H. Wenham.

‘Hartig on the Phytozoa of Antheridia.’ By F. Currey, Esq., M.A.

‘On a Universal Indicator for Microscopes.’ By J. W. Bailey.

‘On the Impregnation and Germination of Algæ.’ By M. Pringsheim. [Abridged from the Reports of the Berlin Academy.]

‘On Sphærozoum, Meyer (*Thalassicolla, Huxley*), Noctiluca and the Polycystinæ.’ By Professor Müller. [Translated from the Report of the Berlin Academy, April 19, 1855.]

‘On the Development of the Spermatozoids in *Torreya vitrea*.’ By M. A. de Quatrefages. [Translated from the Annales des Sciences Naturelles, 4th Series, vol. ii. p. 152.]

‘On the Influence of Dilute-Sulphuric Acid on the Deposit Layers of the Cell-Wall in its Earliest Condition.’ By Dr. T. Hartig. [Translated from the Botanical Zeitung, March 30, 1855, p. 222].

‘On the Cystolites or Calcareous Concretions in the Urticaceæ and other Plants.’ By H. A. Weddell, Aide-Naturaliste in the Jardin des

Plantes. [Translated from the *Annales des Sciences Naturelles*, 4th Series, vol. ii. p. 267.]

Notes and Correspondence:—The Circulation in Aqueous Plants; by Mr. James Western. On the Starch Grain; by O. Maschke. Aperture of Object-glasses; by Mr. F. H. Wenham. On the Structure of the Frond of *Polysiphonia fastigiata*. Further Remarks on the Fly's Foot; by Mr. J. Hepworth. Microscopic Preparations.

Proceedings of Societies:—Microscopical.

Zoophytology.

‘*Annals and Magazine of Natural History.*’ No. 95, dated November, 1855; price 2s. 6d. London: Taylor and Francis, Red Lion Court, Fleet Street.

THE November number of this Journal contains the following papers:—

‘Notes on some New or little-known Marine Animals.’ By Philip Henry Gosse, A.L.S.

‘On the Injurious Effect of Excess or Want of Heat in the Aquarium.’ By Robert Warington, Esq.

‘On the Mechanism of Aquatic Respiration, and on the Structure of the Organs of Breathing in Invertebrate Animals.’ By Thomas Williams, M.D. Lond.

‘Notice and Description of a New Species of Spider.’ By the Rev. Hamlet Clark, M.A.

‘Observations on the Habits of the Stickleback.’ By Robert Warington, Esq.

‘The Vegetable Individual in its relation to Species.’ By Dr. Alexander Braun. [Extracted from *Silliman's Journal* for September, 1855.]

Bibliographical Notice:—‘*Glaucus; or, the Wonders of the Shore.*’ By Charles Kingsley.

Proceedings of Societies:—Linnean, Zoological.

Miscellaneous:—Bohemian Forests and Peat Bogs; by Dr. Hochstetter [extracted from the Proceedings of the Imperial Geological Institute of Vienna, January 23, 1855]. Occurrence of *Diodonta fragilis* at Weymouth; by William Thompson, Esq. Description of a Second Species of the Genus *Procnias*; by Philip Lutley Sclater, M.A. [extracted from the Proceedings of the Zoological Society, November 14, 1854]. Descriptions of some New Species of Birds;

by the Vicomte du Bus de Gisignes [extracted from the *Bulletin de l'Academie Royale de Belgique*, 1855, vol. xxii. pp. 153—156]. Description of a New Species of *Petrogale*; by Dr. J. E. Gray, F.R.S., V.P.Z.S., &c. [extracted from the *Proceedings of the Zoological Society*, November 14, 1854].

Removal of Vespertilio emarginatus from the List of British Bats, and addition of Vespertilio dasycnemus to it. By ROBERT F. TOMES, Esq.

ON a former occasion (Zool. 4357) I collected and arranged such notices of this species as fell within my reach, but was at the time unable to come to any very satisfactory conclusion, yet felt perfectly certain that more than one species had been described under the specific name of *emarginatus*. Since that time an opportunity has occurred of inspecting the rich stores in the Museum of Leyden, where are three specimens of this species—one taken near Liège, another at Abbeville, and the third is simply labelled “France.” All these are exactly similar to the ones I have before described, from the collection of M. Verreaux, and wholly unlike anything I have seen any account of in Great Britain. M. Temminck’s figure is certainly taken from that of Geoffroy, and is by no means a good representation of the species; and I am somewhat puzzled to know how he can use the expression, that to a certain extent it resembles the *V. mystacinus*, with which he says it can easily be confounded.

Were it not for the circumstance of specimens having been at various times taken near Abbeville, the locality from whence Geoffroy obtained examples, I should very greatly doubt if the figure given by the latter naturalist were not taken from a specimen of *V. mystacinus*; certainly the figure of the cranium exactly agrees with that of the latter species. The specimens before alluded to as occurring in Warwickshire are evidently similar to examples of *V. mystacinus* in the Leyden Museum, having an unusually ferruginous colour, and with the ears more notched than usual. I cannot help thinking that it was from a similar specimen that Geoffroy took his figure and description. I still think that the figure given by the Prince of Musignano was taken from *V. Nattereri*. The figures and descriptions before given (Zool. 4357) will serve to distinguish this species, not only from all British, but from all other European species.

Notwithstanding that Baron de Selys Longchamps speaks of the species as abundant, it appears probable that it is unknown, except

in France, Holland and Belgium. In Holland M. Temminck says it is rare, and confined to the northern parts, not appearing abroad until dark, and taking its food over the surface of stagnant water; but it is somewhat remarkable that the Museum of that country does not contain a native specimen. In Belgium the Museums of Antwerp and Ghent do not contain examples, although they have other European species. Our Museums do not possess it, nor is it enumerated in the catalogue of the Mammalia of the Frankfort Museum, made complete up to the present time by the kindness of a friend, who has added to the catalogue all the species supplied to the Museum since its publication. Indeed, the omission of the species by Wagner, in his continuation of Schreiber's work, would seem to indicate that it is not known in Germany.

With respect to the specimen mentioned by Mr. Buckton, I have since had an opportunity of seeing it at the British Museum, and at once gave it as my opinion that it was a young example of *V. dasycnemus*, *Boie*, the *V. limnophilus* of M. Temminck's monograph, an opinion I before expressed from reading Mr. Buckton's description. This species appears to be very common in the vicinity of Leyden, and was pointed out to me, flying in considerable numbers over the surface of the water, by Dr. Schlegel, as we were walking in the evening beneath the fine trees bordering the canal that runs round the town. This and the common *Noctule* were the only species we saw about Leyden.

The result of these examinations tends to the removal of *V. emarginatus* from the British list, and the addition of *V. dasycnemus* to it.

The following description of *Vespertilio dasycnemus*, added at the request of the Editor, is taken partly from that given by M. Temminck, and partly from notes made by myself from specimens in the Leyden Museum:—

VESPERTILIO DASYCNEMUS, *Boie, Isis* (1825). *De Selys-Longch.*

Études Micromam., p. 139 (1839). *Keys. u. Blas. Die Wirb.*

Europ., p. xvi. and p. 55 (1840). *De Selys, Faune Belge*, p. 19 (1842).

V. limnophilus, *Temm. Mon. Mam.* tome ii. p. 176 (1835 to 1841).

V. emarginatus, *Buckton, Linn. Trans.* (Dec. 1853).

Ears of medium size, oval, with the lobe at the base of the outer edge; but moderately developed, varying somewhat in this respect:

tragus nearly straight and tapering, but with the extreme lip rounded. A very small portion of the end of the tail free from the membrane. Wing-membrane springing from the *superior articulation of the metatarsus*, thus leaving the foot wholly free. Fur soft, silky; all the upper parts and sides of the neck, in the male, of a darkish mouse-gray colour; in the female, a little more tinged with brown: chin, cheeks, throat and all the under parts of the body with the fur nearly black at the base, tipped with grayish white; abdomen nearly pure white; a spot of brownish ash-colour marks the insertion of the wings. The whitish tips of the hairs are more or less extended, according to the age of the individual.

Dimensions.

TEMMINCK.		BUCKTON.	
Old.	Young of the year.		
Head and body	2 in. 8 lines	3 in. 9 lines	{ . . . 3 in. 7½ lines.
Tail	1 „ 7 „		{ . . . 1 „ 5 „
Fore arm	1 „ 8 „		{ . . . 1 „ 7½ „
Expanse	11 „ 8 „	9 „ 7 „	{ . . . 10 „ 3 „

Although the discrepancy in the dimensions here given may appear considerable, it must be borne in mind that Mr. Buckton's specimen is not perfectly adult, the finger-joints still exhibiting cartilaginous articulations, and the fingers themselves being obviously shorter than they would be in the adult state: hence would arise the less expanse. The length of the head and body is only of value when unaltered by the stuffer, *i.e.* when the animal is fresh; but the most valuable and constant measurement in the animals of this order (more particularly the insectivorous section of it), is that of the fore arm, which usually arrives to near its maximum size before the other parts have made more than an approximation to theirs. I may here add that it is rare to meet with any considerable differences in this part in the same species when fully adult, unless, as is sometimes the case, a particular locality influences the size of the species in all its parts; *e.g.* the bats (as well as the other Mammals) of Ceylon and South India are smaller than the same species in other parts of India, and consequently will have the fore arm shorter, but they are there, as in other places, individually similar in that particular.

ROBERT F. TOMES.

Welford, near Stratford-on-Avon,
November 15, 1855.

A Glance over the Cliffs of Moher (County Clare, Ireland).—We bestowed our horses within the accommodations so considerately provided for the traveller, and then we slowly ascended the gradual slope, all unconscious of what lay beyond. But how shall I describe the noble sight that burst upon us all at once as we topped the rise of undulating turf strewn here and there with yellow mountain-pansies? The feeling at first of familiarity, as if it had been a scene we had visited before, and then the gradual awe stilling the heart, as it broke upon the soul in all its reality and magnificence. The dark wall that has defied the wasting ocean beyond the reach of history or of man—bulwark of earth—champion of the land! and the white birds, attendant spirits of the precipice, a whirling maze beneath, around, above, all with ceaseless clamour of affection and anxiety—nor without reason. Marked you you gang of men sitting in a group, who seem so quietly at home, so thoroughly familiar with the wonders of the place? they are not there for nothing. Let us approach them: the coil of polished well-worn rope, the crowbar fixed firmly in the soil—the triple support of confederated hands: it leads to a lower platform, and there you may see the reapers of that extraordinary harvest as they sit, each ready to take his turn of duty. The poor kittiwakes pay a heavy toll—eggs from the nest and young birds from the rock-ledges, noosed, as of old, with rod and snare by the dexterous fowler—they are drawn up by twenties, tucked under the belt of that man now hoisted up a mass of feathers. And why condemn them? theirs is the daring attractive life of the plunderer—appointed check of nature: theirs, too, are the qualities—no mean ones—of courage, readiness and activity. So fare ye well, brave cliffsmen! at your adventurous trade, be the rope ever strong and the hand firm that speed you on your perilous way. Close by, the cliff towers above 900 feet of sheer abyss, and a steady eye may dare survey that awful gulf over which it is related that once two greyhounds were hurried by excess of ardour in the chase, and over which an adventurous spirit may himself be swung, the darling and the wonder of those rugged climbers, and it is an exploit worthy of the trial, to hang in daring glee, with none but sea-fowl to whisper to his palpitating heart, to hang in space the aerial conqueror of birds, while from above the careful guardians of the rope cheer and encourage, with all the generous approval which a seaman will evince when trusting the helm to no faint stranger's hand. It is a deed of enterprise worthy the zeal of an ornithologist. A little further, let us look elsewhere at the fluttering clamorous gulls and circling auks that start every moment from the cliff and describe short circuits, with now a succession of rapid strokes and now an even swinging flight, the guillemots brownier, the razorbills blacker of the two, and the lesser puffin also (called "parrot" here) tunnels his way to a secure retreat in the turf of the slopes and ledges: and the chough you may chance to see, and the jackdaw and the rock dove, with earnest beat of its hurrying wings; and they will tell you of the eagle (*H. albicilla*) that shuns approach, and lays his eyrie beneath some overhanging arch, secure from plunder himself though he may not spare. And the gallant peregrine, relic of chivalry, as thou wert its compeer, crossed he not our sight as we skirted the edge—well known by his stalwart form and knightly moustache? How I rejoiced in the absence of the murderous gun, else were the temptation perhaps too great. So gaze down once more ere we go; note the herring gulls, of superior size and hoarser challenge; and on the black rocks, against which the foam is spirling high, observe the great cormorants—seeming at this distance no bigger than crows—till you see one start from his green repose and scurry along the surface with no flagging pinion. And then the long sea line, which you think you might look over from so high a stand, and far in the distance the lonely isles of Arran,

wrapped haughtily in clouds, all make a prospect of surpassing beauty, all combine to fill brimful the eye and heart and mind. Carry, too, the eye to that isolated pyramid below tis, on which the sea-birds swarm tier above tier, smiling defiance to the fowler from their fortress, as yet inviolate. Is not your head dizzy? you seldom looked down so far beneath your feet as its summit, and yet that is but half the depth a pebble must traverse to reach the water. Is that a seal? your guide hesitates, for it is no easy matter to distinguish him from the rock on which he sits; but they are common enough most days. Turn, then, your attention westward, ye naturalists and sportsmen that like something larger than gnats or diatoms for your quarry. Here is a noble field; not Scotland only is worthy an excursion. There are fewer species of birds perhaps, and less variety breeding in the inland lakes of Ireland, but for one grand feature—the precipice breasting the Atlantic—this place is well worthy of your notice, and the Irish Highlands offer, too, a little-explored country.—*Hesperus.*

Notices of Rarer Birds about Barnsley.—In the natural history of this country, as various species, at no distant period only rare by comparison with others, are now becoming positively so, any notice of rare occurrences possesses an additional, though painful interest, from the consideration that opportunities to study the living subject, in its natural state, are growing less and less, in proportion as the over-anxious desire to possess collections of preserved specimens is encouraged. Of the rarer birds noticed during the present autumn a bare enumeration is here given:—The hooded crow was obtained on the 9th of November; the kestrel, sparrow hawk, longeared owl, brown owl and white owl are the principal birds of prey noted in October; a pair of nightjars from the neighbouring moors in September; and in the last week of August several ringed plovers or dotterells (*Charadrius hiaticula*), the green sandpiper (*Totanus ochropus*) and the black tern (*Sterna fissipes*), which proved a young bird of the year; the upper parts gray margined with brown, and the white collar beautifully distinct, were observed, and some shot, on the newly-formed island in Worsborough Reservoir, a place well adapted for water-fowl, which would add a new and living grace to its rich landscapes, if permitted to come and go unmolested. The last three species are the rarest of those named, but not so rare to this part and to the entire kingdom as the little auk, which occurred near this town last November, about which time the scaup duck and the tufted duck were obtained in this neighbourhood.—*Thomas Lister, Post Office, Barnsley, Yorkshire, November 9, 1855.*

On the Habits of Palaeornis Malaccensis.—These handsome birds are not uncommon in Labuan; and are to be seen in the early morning flying about above the tops of the trees in small flocks of six or eight, uttering in their flight a loud, quick scream, very much like the note of the common swift: they are particularly fond of the fruit of the *Dryabalanops camphora*, which they split open, and eat the curious crumpled cotyledons, in spite of their pungent taste and smell of turpentine. The specimen from which the above description is taken was shot when feeding upon the seeds of the *Dillenia speciosa*, a shrub about ten or fifteen feet high, and it is the only instance in which we have known them venture so near the ground: when first seen he was busy opening the capsules of the plant, and scraping out the seeds with his beak, never omitting to clip off at a single bite every one he emptied; having done this he dropped himself under the twig he sat on, swinging by one leg to watch it fall: when it reached the ground he testified his satisfaction by a low chirp, and, giving himself a vigorous swing, caught the perch with his other foot, and walked gravely along to another capsule, not hopping, but placing one foot before the other in a most odd-fashioned way.

Another of these parrakeets, which had been pinioned by a shot without being otherwise injured, was placed in a cage, where, soon finding his two long tail-feathers to be an incumbrance, he deliberately turned round, pulled them out, and then walked round the cage evidently to try the effect of his contrivance.—*Contributions to the Natural History of Labuan.*

On the Habits of Dicæum croceoventer in Confinement.—These little birds are not uncommon in Labuan, and have something the habits of the English Regulus; they haunt low brushwood, and continually utter a low, shrill chirp; they are very fearless, allowing themselves to be almost touched before they take to flight: the Malay name, which signifies spark-bird, is very appropriate, as when darting about among the bushes the cock bird really looks as bright as a flash of fire. The nest of this species is about the shape and size of a goose's egg, and is suspended by the small end from some slender twig of a tall tree; it is built of fine green moss and a sort of brown byssus, and lined with some white fibre and a few small feathers: one of these nests was found on a tree which was felled in the jungle; all the young birds, however, except one, had been killed by the fall: the survivor was brought to Mrs. Motley, who succeeded, by great care, in bringing it up, feeding it at first upon rice and banana pulp; as soon as it was strong enough it was placed in a small cage; though very restless, never being for one moment still, it was perfectly tame and fearless, and would sit upon the finger without attempting to fly away, and though its whole body, feathers and all, might have been shut up in a walnut, it would peck at a finger held towards it with great fierceness: for a long time it would only take food from the hand, but afterwards, when food was given it, it dropped and shook its wings rapidly, as we see a hen partridge occasionally do. At first its beak was short, straight and sharp, but as it grew its form gradually changed to that of the adult Dicæums; it also changed its diet, altogether refusing rice, and only occasionally taking plantain; for some weeks it fed exclusively upon sugar and water, which it sucked up like a humming-bird; it was very fond of bathing in a large shell full of water placed in its cage.—*Id.*

Late stay of Swallows in 1855.—Swallows remained unusually late here; I saw them playing about on Sunday, the 11th of this month [November], since which they appear to have departed: they have been known on a former occasion to have remained until the 23rd. I am right in calling them *swallows* and not *martins*, as the brown patch on the throat was clearly seen with a glass.—*George Guyon; Ventnor, Isle of Wight, November 20, 1855.*

The Bohemian Waxwing in Norfolk.—One of these elegant but most uncertain visitors to our coast was shot, a few days since, at Hoxton, in this county. It is rather singular that throughout the last long and severe winter not a single waxwing was met with amongst many rarities.—*H. Stevenson; Norwich, November 15, 1855.*

The Palombière of Bagnères de Bigorre.—When at Bagnères de Bigorre, in the department of the Hautes Pyrénées, in October last, I paid a very interesting visit to the Palombière, which is about three miles distant from that place. I had previously seen the Palombarii at La Cava, in the kingdom of Naples, but only in the winter, when they were not at work, and I had never rightly understood the method in which this *chasse* was conducted. The Palombière of Bagnères consists of a row of beech-trees, running half a mile or more in an irregular line along the brow of the hill which forms the north-eastern border of the Vallée de Campan. These trees are planted in clumps of threes or fours, leaving here and there, at intervals, open spaces of from twelve to twenty yards in breadth: these open spaces are occupied by long nets,

which are raised by pulleys (attached to the ends of poles affixed to the trees) to a height of perhaps forty feet from the ground. At each of the top corners of the nets a stone is tied, so that, when the string which passes through the pulley is let loose, they fall quickly to the ground. In front of the line of trees, some thirty or forty yards, stand several very tall slender poles,—raised, by splicing two or three together, to upwards of eighty or ninety feet in height,—and a-top of which are placed rudely-formed cradles occupied by boys, who, raised aloft in the air at this apparently dangerous elevation, play an important part in the proceedings: they are furnished with several roughly-carved flat pieces of wood, made something like a pair of wings with a handle at the end, called *eperviers*, i. e. hawks. The pigeons arrive from the Plains of France, and come up the slope of the hill to cross over into the Valley of Campan, on their route southwards through the Pyrenees: they are of two species—called there Palombes (*Columba palumbus*, our common woodpigeon) and Ramiers (*Columba aenae*, the stockdove). Directly one of the boys in the boxes aloft perceives any pigeons approaching he gives a peculiar signal of warning to the fowlers, and everything is made in readiness. On the birds approaching more nearly he launches into the air one of his *eperviers*; this falls with a whirring sound, such as I suppose a hawk would cause by his stoop. The unfortunate pigeons, thinking the arch-enemy is nigh, immediately fly down low towards the ground, and on seeking to pass through the spaces left in the row of trees, come against the nets placed to intercept them. The fowler then lets go his string, which passes through the pulley, and the net and birds come to the ground together. The season for taking pigeons in this manner begins on the 10th of September and lasts till the feast of St. Martin (October 11th). During the whole of this time the fowlers never leave their posts from dawn to dusk; their success is naturally very various. Sometimes they take many hundreds in one day, sometimes very few, and sometimes none. The birds pass at a greater elevation when the weather is fine and clear, and are then, of course, more likely to pass above the nets. The Palombes, although more numerous than the Ramiers, always fly higher, and are wilder and more difficult to take. The ordinary price of the former in the market at Bagnères is about twenty sous, of the latter only about sixteen sous a-pair. There is said to be no particular time of day at which the flights are more numerous; the only successful take I saw took place between 12 and 1 o'clock, P.M. A naturalist resident at Bagnères de Bigorre (who has an excellent collection of all the animal and vegetable productions of that part of the world) tells me that the ring dove never breeds there, but passes northwards, in the spring, in pairs, and (as we have seen) returns southwards, in the autumn, in small flights. This is very different from what is generally, I believe, the case in the British isles, where the ring dove, although collecting in flocks in the winter, is found in most localities all the year through.—*Philip Lutley Selater*; 49, Pall Mall, November 12, 1855.

On the Habits of Megapodius Cumingii.—In Labuan these birds are not uncommon, and are said to be principally confined to small islands, to such more especially as have sandy beaches; they are very rarely to be seen, being extremely shy, and frequenting dense and flat parts of the jungle, where the ratans grow, and where the luxuriance of the vegetation renders concealment easy. The Malays snare them by forming long thick fences in unfrequented parts of the jungle, in which, at certain intervals, they leave openings, where they place traps; the birds run through the jungle in search of food, and, coming to this fence, run along it till they find one of the openings, through which they push their way, and are caught in the trap. In

walking they lift up their feet very high, and set up their backs, something like Guinea fowls; they frequently make a loud noise, like the screech of a chicken when caught; they are very pugnacious, and fight with great fury by jumping upon one another's backs, and scratching with their long strong claws. Their food principally consists of seeds and insects; the eggs are of a fine dark cream colour and of a very large size, three of them weighing nearly as much as a full-grown bird. According to the account given by the Malays, each bird lays about eight or ten eggs at each time of breeding, and their nests are merely large heaps of shells and rubbish, deposited over the sandy soil, in which the eggs are buried to the depth of about eighteen inches. Since receiving this account, however, we have had an opportunity of inspecting a very large and perfect nest or breeding hill, and found it to be about twenty feet in diameter, and composed of sand, earth and sticks; it was close to the beach, just within the jungle, and scarcely above high-water mark, and appeared to have been used for many years. The boatmen seemed to have no clew to what part of the hillock contained eggs, but said that they were never without some when frequented at all; they sought for nearly half an hour in vain before they found one, and then they found about a dozen together; they were buried at a depth of from one to three feet in an upright position, and the ground about them was astonishingly hard. The eggs thus deposited are left to be hatched by the heat of the sun, and this, the Malays assert, requires between three and four months to complete: those obtained from this heap were brought home and buried in a box of sand, and a month or two afterwards it was discovered that they were all hatched, but that, from neglecting to place them in a proper (*i. e.* probably an upright) position, the chicks could not get up through the sand, and had all perished. When hatched the chicks are almost entirely fledged, even the long quills being, as the Malays say, "needled." When first dug out, some of the eggs had lost much of their outer colour, which appeared to have scaled off, leaving only a white chalky shell. On a former occasion some eggs were brought by the natives, and were buried in a box of sand and exposed to the weather: at the end of about three weeks one of the chicks was hatched; a Malay, who saw it emerge, said that it just shook off the sand and ran away so fast that it was with difficulty caught; it then appeared to be nearly half-grown, and from the first fed itself without hesitation, scratching and turning up the sand like an old bird. Two more afterwards emerged in the same state. Their eggs are held in such high estimation as food, both by natives and Europeans, that one cannot but fear that these interesting birds, though now so abundant, will ere long become scarce.—*Contributions to the Natural History of Labuan.*

Late Stay of Swallows and Martins in 1855.—I perceive that at p. 3753 of the 'Zoologist,' your correspondent, Mr. W. C. Hewitson, remarks, "I have never before this year had the pleasure of seeing swallows in November," and he goes on to record the occurrence of four house-martins at Oatlands on the 21st of November, 1852. I have a still more remarkable fact to relate: yesterday (December 6) there were several chimney-swallows flying about my house; the previous night there had been a slight sprinkling of snow in the adjoining country. On the 23rd of November I left the neighbourhood of Uckfield, in Sussex, and at that time there were *several* house-martins skimming about in front of the house, though the weather was anything but warm.—*Edward Vernon Harcourt; Hastings, December 7, 1855.*

Late Appearance of the Swallow Tribe.—I observed up to Wednesday last, in this district, extending as far as Helston, flocks of house-martins flying about, and hawking vigorously for insects.—*Edward Hearle Rodd; Penzance, December 1, 1855.*

Occurrence of the Sea Eagle (Haliaëtus albicilla) in Norfolk.—A fine specimen of this noble bird was shot at the beginning of this month near Ormesby Broad. It proves to be a female; apparently, by the beak and plumage, in its second year.—*H. Stevenson; Norwich, December 12, 1855.*

Note on the Hawfinch breeding in Norfolk.—I am indebted to Mr. King, bailiff to Lord Wodehouse, at Kimberley, for the following particulars respecting these birds: no doubt careful observation would discover them in many localities as suited to their habits, although, as Mr. Doubleday observes of those in Epping Forest, their extreme shyness and quick movements render them very difficult of approach. About the latter end of June last Mr. King, who lives close by the park, observed an old bird of this species and three young ones on a greengage-tree in his garden: on fetching his gun he succeeded in shooting one of the young birds, but has never seen anything of the others since. This was the first time he had observed them during the summer; in sharp weather he has frequently seen them on some large whitethorn trees in the park, a very favourite resort of the hawfinch. I have examined the captured specimen, which agrees very nearly indeed with Mr. Yarrell's description of the immature plumage; the head, neck and upper parts yellowish olive-brown and the throat yellow, but with no apparent indication of the black patch common to both sexes in an adult state. It is to be hoped that another summer may bring further proof in the appearance of a nest amongst the whitethorn bushes. I am aware of no previous record of their breeding in this county.—*Id., December 10, 1855.*

Occurrence of the Great Plover and Spotted Crake in Devonshire.—On the 24th of last month I bought an adult specimen of the great plover or thick-knee (*Œdicnemus crepitans*) in the Plymouth market, which was killed in the neighbourhood. I believe it is not generally known, but which from repeated examination I have found to be the case, that the enlargement of the knee-joints and tarsi of this species is confined to young birds only. A similar peculiarity of formation I have also observed to exist in the legs of the young green sandpiper. A fine example of the spotted crake (*Crex porzana*) was obtained in the vicinity of Plymouth a short time since, and others were seen in the same locality.—*John Gatcombe; Wyndham Place, Plymouth, December 3, 1855.*

Occurrence of the Stilt Plover (Himantopus melanopterus) at Bosham, in Sussex.—A magnificent specimen of this very rare bird was shot and preserved during the present month at Bosham, in Sussex, by Mr. A. Cheeseman: its legs measured eight inches in length, and its weight was but $4\frac{1}{2}$ ounces.—*Edward Newman.*

Occurrence of the Velvet Scoter at the Land's End.—A specimen of this duck, in very perfect plumage, was captured about ten days since at Whitsand Bay, near the Land's End: it is a bird of rare occurrence on the Cornish coast.—*Edward Hearle Rodd; Penzance, November 26, 1855.*

Remarkable Flight of Woodcocks.—The continuance of the north-east winds to the end of October, with a morning moon, brought a large flight of woodcocks in these parts, and I may say pretty generally throughout Cornwall. A young farmer in the parish of St. Buryan, within a few miles of the Land's End, killed fifty-four in one week, and vast numbers were killed in various directions throughout the district. By way of showing the extent of this great southern migratory movement, I may mention that Captain Tower, who lately was on a visit to Mr. Smith at Tresco Abbey, Scilly, shot in one day thirty-nine woodcocks. All these early great flights of woodcocks consist, I have no doubt, of the main body, whose destination is the remoter southern latitudes; some, no doubt, remaining in the northern countries. The principal bulk,

however, of those found throughout our shooting season are made up of smaller flights afterwards; and these again, when our winters are very severe, are driven down from all parts of England to our most southern and western peninsula, as I have often remarked (as last year), in the months of January and February.—*Id., November 12, 1855.*

Note on the Iceland Gull and the Shore Lark in Norfolk.—During the first week of this month a male specimen of the shore lark (*Alauda alpestris*), assuming the winter plumage, and a nearly adult female of the Iceland gull (*Larus leucopterus*), were shot at Holkham, in this county.—*H. Stevenson; Norwich, December 10, 1855.*

Question respecting the American Scaup said to have been taken at Scarborough.—In indexing the 'Zoologist' for 1855, my attention was attracted by a record forwarded by Mr. Roberts, of Scarborough (Zool. 4631), of the occurrence of the American scaup near that town; but the record is unfortunately unaccompanied by any description or further particulars. The bird to which this name was applied appears to have been considered by the late Mr. Vigors as an American variety of the common scaup (*Anas marila* of Pennant), and, if proved distinct from that bird, Mr. Vigors proposed to call it *Fuligula mariloides*. At this point all our knowledge of the bird appears to cease. Mr. Yarrell, however, gives, in his 'History of British Birds,' vol. iii. p. 247, under the same name, *Fuligula mariloides* or American scaup, the figure and description of a bird, in the possession of Mr. Doubleday, which was purchased in Leadenhall Market. In August, 1845, Mr. Fisher, then an active correspondent of the 'Zoologist,' communicated (Zool. 1137) an account of a duck, in the possession of Mr. Gurney, of Norwich, which had occurred on Rollesby Broad, near Great Yarmouth, and which, not appearing referrible to any described species, he supposed a hybrid between the common and white-eyed pochards: the same acute ornithologist subsequently described the same specimen (Zool. 1379) in his 'Account of the Birds of Norfolk.' In April, 1847, a third bird was purchased by Mr. Bartlett in a London market, and both that gentleman and Mr. Fisher agreed that it was of the same species as Mr. Gurney's; and the three birds, Mr. Doubleday's, Mr. Gurney's and Mr. Bartlett's, were exhibited by Mr. Bartlett on the 13th of the same month, at an evening meeting of the Zoological Society, as a new species of duck which he proposed to call *Fuligula ferinoides*; and Mr. Fisher published figures and description in the 'Zoologist' for May following, under the name of Paget's pochard or *Fuligula ferinoides* (Zool. 1778), a name which all ornithologists have received, and the name of American scaup or *Fuligula mariloides* has been removed from the British list. What, then, is the bird thus denominated by Mr. Roberts? Is it Paget's pochard, or a duck heretofore unknown as British? I shall consider it a great favour if Mr. Roberts or some other of my correspondents in the North will favour me with a reply.—*Edward Newman.*

Fresh-water Fish in Confinement.—With the remarks of your able correspondent, Mr. Newman, upon fish in confinement, I in the main agree; but on one or two points I beg to differ; first, with regard to the timidity of the loach, though undoubtedly it is a shy fish, but it will, with a little attention, become familiar; I have two exceedingly so; they rise and take food from the hand eagerly, and will even allow me to touch them with my finger. I have also kept them for months in a vessel, the sides being made of zinc—for a fresh-water aquarium I do not think it injurious. Again, with respect to the sluggish habits of that pretty fish, the gudgeon, it is, if so

I may express myself, a nocturnal fish—seeking the shade of weeds, stones, &c., during the day—rising into a state of great activity as night approaches, during the greater part of which it swims with as much ease and grace as any of the finny tribe: I have four, one about three inches in length, the others from one to two inches: I have also noticed their fins are free from the attacks of the pugnacious *Gasterosteus*, and also my perch do not seem to quarrel with them as with the dace, bleak or carp. The perch thrives remarkably well in confinement, and becomes very tame; its brilliant hues, graceful movements and its beautiful dorsal crest makes it a very attractive fish in the aquarium: soon after their introduction into my tank I was repeatedly struck by the daily decrease of some very small roach and dace, and for a long time was at a loss to account for it, until at length I found one morning that a perch had taken one too large to swallow—the tail of the roach was sticking out from its mouth: I relieved them, and both are now doing well: the perch are shyish during the middle of the day, but very active early in the morning; and in the evening, when at rest, they use their tail as a support, remaining perfectly motionless at an angle of about forty-five degrees, with the tail on a stone, and thus they remain for hours. My collection of fishes includes the bleak, carp, roach, dace, eels, gudgeon, perch, minnows, sticklebacks, tench, loach and gold fish, and all of whom thrive well, and are peculiarly adapted for the fresh-water aquarium.—*A. Horace Lloyd*; 19, St. Paul's Street, New North Road, December 12, 1855.

The Great Sea-Serpent.—The sea-serpent having again risen, phoenix-like, from the deep, in the pages of the 'Zoologist,' it may perhaps be pardonable to solicit insertion for the following attempt at explaining his reality, in some at least of the many instances of his reported appearance. Any one who has looked at the preserved remains of the great ribband or scabbard fishes, or who has even read the striking accounts of the huge size they sometimes attain, as well as their extreme rarity, may, like myself, have been thus reminded of those mysterious sea-monsters which are occasionally observed by the unlearned, to be no less a puzzle to learned opinion. When, too, we know that these fish are supposed often to swim at the surface, and thus to be driven ashore more readily, when the only example of whose healthy life we have a credible account, is described as advancing head above water, and by the undulating movement of his body (Yarrell, vol. i. p. 177), may we not reasonably suppose that there exists other and more gigantic forms of this most interesting race as yet uncaptured, and such as might easily simulate, in the waving of their long dorsal fin, the so-called "mane" of the great sea-snake.—*A. G. More*; London, November, 1855.

Observations on the Habits of the Stickleback.—During the early part of the last summer I had the good fortune to observe the whole progress of the various stages in the breeding of the three-spined stickleback (*Gasterosteus leiurus*), which will therefore enable me to complete the notice already published on this subject in the tenth volume of the 'Zoologist,' dated 1852 (Zool. 3633). In the account there given the observations extended to the completion of the nest by the male fish, and it is my intention in the present communication to carry on the details of the progress from that point, premising that the water was the same which had been employed for the original experiments of 1849, and that the fish contained in the aquarium consisted of three sticklebacks, one male and two females, two tench, and a gold-fish. The position selected by the male fish for the construction of the nest was between two plants of *Vallisneria spiralis*, at the point where the leaves spring from the root, and directly in

front of a fragment of limestone which rose behind the plants and acted as a protecting background to the position. The nest being all prepared, exactly as before described, although by another individual, the eggs were deposited, I presume, during the night of May 8th: this was judged of, not from observance of the act of spawning, but from the altered appearance of the female fish evidencing that she had shed her spawn, from the immediate change made by the male fish in the arrangement of the materials forming the nest, and, likewise, the violent repulsion of the female from the neighbourhood of its position, to which previously he had been as assiduous in driving her. From this period the nest was opened more to the action of the water, and the vibratory motion of the body of the male fish, while hovering over its surface, caused, as before described, a current of water to be propelled across the surface of the ova: this action was repeated almost continuously. The apparent luminosity of the body, if I may so term it, also decreased, and in this state all continued without change until the 18th of May, making a period of ten days. After this date the whole nest was destroyed, and the materials of which it had been composed thrown aside, with the exception of a few wiry stems of a decayed water-moss, and a space cleared around the spot of about 3 inches in diameter; the mud or sand at the bottom being carefully removed with its mouth and carried in this manner to some distance, leaving the rounded stones of the gravel clean and free from any obstruction around them. Watching carefully for a short time, to understand what all this busy alteration indicated, I at last had the pleasure of observing, by the aid of a long-focused pocket-lens, some of the young fry—of course most minute creatures—fluttering upwards here and there, by a movement half swimming, half leaping, and then falling rapidly again upon or between the clean pebbles of the shingle bottom. This arose from their having the remainder of the yolk still attached to their body, which, acting as a weight, caused them to sink the moment the swimming effort had ceased. Around all this space above mentioned, and across it in every direction, the male fish, as the guardian, continually moved. And now his labours became still more arduous than they had been before, and his vigilance was taxed to the utmost extreme, for the other fish, three of them some twenty times larger than himself, as soon as they perceived that the young fry were in motion, used their utmost endeavours, continuously, to pounce upon the nest and snap them up. The courage of this little creature was certainly now put to its severest test, but, nothing daunted, he drove them all off, seizing their fins, and striking with all his strength at their heads and at their eyes most furiously. All the assistance that could possibly be afforded him was of course rendered, short of actual interference, by keeping them pretty well fed, in order to allay, if possible, their voracity. Another circumstance, which appeared to add greatly to the excitement that he was constantly subjected to, arose from the second female fish, being in spawn, endeavouring most pertinaciously to deposit her ova in the same locality, and hence rushing frequently down towards the spot; but the male fish was ever on the alert, and although he did not strike at her in the furious way he attacked the larger ones, yet, he kept continually under her, with the formidable back spines all raised erect, so that it was impossible for her to effect her apparent object. The care of the young brood, while encumbered with the yolk, was very extraordinary, and as this was gradually absorbed and they gained strength, their attempts to swim carried them to a great distance from the parent fish; his vigilance, however, seemed everywhere, and if they rose by the action of their fins above a certain height from the shingle bottom, or flitted beyond a certain distance from the nest, they were

immediately seized in his mouth, brought back, and gently puffed or jetted into their place again. This was constantly occurring, the other fish being continually on the watch to devour these stragglers, and make a savoury morsel of these Lilliputian truants. Indeed, the greater number of the whole brood must have fallen a prey to their voracity, as it was only some three or four that reached a size to place them beyond the power of these destroyers. As soon as the young fry could swim strongly the parent fish gradually relinquished his duties, although a constant watch appeared to be still quietly maintained on their motions as they swam about near the surface of the water and among the floating leaves of the *Vallisneria* and *Lemna*. It is a curious circumstance, that, very soon after these young sticklebacks were left unmolested by their companions, both the parent fish disappeared, and I presume have died in some hiding-place among the rock-work; as though their allotted functions—namely, the propagation of their species—having been completed, their period of existence must terminate.*—*Robert Warington; Apothecaries' Hall, September 11, 1855.*

The Gonopteryx Rhamni question.—It is impossible to resist the evidence which has been brought to bear in your last number upon the natural history of our always-welcome brimstone butterfly. I will request, however, the privilege of a little space in your journal to make one or two remarks more, in that spirit, I trust, in which all scientific controversies should be conducted, and which has been so strongly inculcated in the writings and example of such men as Ray, White, Kirby, &c. Natural History is the business of few men's lives—it is the delightful recreation and study of many. The contemplation of Nature, in her wondrous and varied aspects,—the study of those beautiful Laws which the Creator, in his Infinite wisdom, has chosen to be the rule and guide of animated existence,—the patient and enduring research into that great scheme upon which all Nature is founded and built up,—is the object and aim of the naturalist's career; and he follows out this path, not only in searching among books the opinions and experience of others, but wherever the garden of the world is most beautiful—in grassy, flowery fields—in the solitude of the forest—in the cold gray of the mountain top—the student of Nature holds communion with those things for which his yearning after truth has induced him to search. Such a pursuit as this must never be sullied by recrimination among the pursuers, much less should we ever appear irritable if others differ with us in opinion, or consider our own experience and knowledge, however great, as an infallible and undeviating standard. If there is one thing more than another which I have been impressed with by the late discussion, it is the fact that there is a great deal of knowledge stored up in the minds of naturalists of the present day, as securely as their own cabinets are protected from the investigating propensities of *Acari* or *Dermestes*. One gentleman says that he has known for thirty years that *G. Rhamni* was not double-brooded and that the imago hibernated; and yet during that time we have had published the works of Stephens, Westwood, Jardine, Morris, &c., who have each recorded a different opinion. Linneus, in the preface to his 'Fauna Suecica,' quaintly remarks, "Longa denique experientia edocti

* Printed in the 'Annals and Magazine of Natural History' for November, 1855, and communicated by the author.

mortales, plus cæperunt sapere." But how are we to begin to be wise, if the experience of practical men is bottled up, and explodes with indignation when some one less fortunate expresses an opinion that the only recorded doctrine is the correct one; and this question of hibernation is, I confess, to me one of great interest. At the risk of being thought obstinate, I must still express my opinion that the scheme of insect-life, so far as we understand it, is the death of the imago before winter—as soon, in fact, as the object of its existence is attained, viz. the procreation of its species; and the extent to which the pupa will bear cold, in comparison with the imago, has been a fruitful and interesting subject of comment in the 'Zoologist'; and I think that, where the opposite fact is shown to exist, viz. when the imago can bear the cold, and the pupa, according to your experiments, cannot, this may be considered a casual and not a constant feature in insect-life. Mr. Doubleday, however, in a private note, dissents from this view, and, as I think his opinion at all times valuable, and especially so on practical points connected with the Lepidoptera, and, as I am sure any additional facts will be as interesting to your readers as they have been to me, I will quote (with his permission) a part of his letter. I will premise that the first part of the extract refers to an objection I took to his definition of a double brood in the 'Zoologist' for September (Zool. 4811): I suggested that every escape from the pupa in the same year ought to be considered a brood, otherwise the cycle of single-brooded insects being only completed in the two halves of separate years, the case would not be included in his definition. The following is the extract:—"I quite agree with you about double broods, and your definition is better than what I wrote in haste, though, at the same time, mine is correct. The changes are gone through in twelve months by each brood; for instance, the eggs of *G. Illunaria* are deposited in April—these hatch and produce moths in July, from which brood larvæ are hatched which become pupæ in the autumn, and produce moths the following March. The eggs of *G. Rhamni*, laid at the same time, produce larvæ which become butterflies in August, which live on till the following April, and then deposit their eggs: of course there is only one brood in the twelve months. *Rumia Cratægaria* differs from any other British species, as far as I am aware, in its broods: it emerges from the pupa state at three different periods of the *same year*, viz. April, June and August; but the June brood is not the produce of the April moths, but of those of the preceding August, which pass the winter in the *larva* state and feed again in the spring, while those from the June brood become pupæ in the autumn and produce the moths in April: the specimens which appear in June are always larger and finer in colour and markings than those of the other two broods. I cannot at all agree with you that the hibernation of the perfect insect can be called a casual occurrence: an event can only be casual which is out of the regular course of nature, which the hibernation of certain species is not. You say, but 'I still consider that the general scheme of insect-life is the death of the imago after the object of its existence is attained, viz., that of procreating its species.' I admit that this is correct; but many species never seem to have any sexual desire till after hibernation, and therefore without it the end of their existence would not be attained. I believe species which hibernate *never* copulate in the autumn (I am speaking of Lepidoptera). Out of the thousands of *Glæa Vacinii*, *Spadicea* and *Satellitia* that I have seen at sugar in the autumn I never saw any attempt at sexual intercourse; but when they re-appear in the spring I have seen scores of pairs *in cop.* on the trees. I never saw *Vanessa Io*, *V. Atalanta*, or the last brood of *Urticæ* copulate in autumn: the males take no notice whatever of the females; but in the spring it is not uncommon

to see half a dozen males after one female. You ask where *Atalanta*, *Polychloros*, &c., conceal themselves: I reply,—in crevices of old trees, sheds, or any convenient places they can find. Last winter some large stacks of beech faggots, which had been loosely stacked up in our forest the preceding spring, with the dead leaves adhering to them, were taken down and carted away, and among these were *many scores* of *Io*, *Urticæ* and *Polychloros*. Any mild day in the middle of winter, if you take a pair of fumigating bellows and blow tobacco-smoke into furze-bushes, you will drive out scores of *Depressariæ*, &c., which are hibernating there. The autumnal *Tineæ*, *Cerostoma radiatella* and *costella*, so common on oaks, live through the winter among the dead leaves, and re-appear in the spring in the most perfect condition, and live on often through May. I have repeatedly beaten them out when the ground was covered with snow." This extract is rather long, but I am sure none of your readers will regret it. In fact, I think I shall try some other *vexata quæstio*, in order to uncork the bottles in which our practical entomologists keep their valuable knowledge. With regard to the original question, we must, I think, consider this set at rest, unless some industrious naturalist finds the pupæ in winter, or a second Captain Watkins comes to the rescue, and discovers the larvæ *feeding in September*.—C. R. Bree; Stricklands, Stowmarket, November 7, 1855.

Capture of Colias Hyale and C. Edusa in Sussex.—I have taken in this neighbourhood, towards the end of August of the present year, six specimens of *Colias Hyale* and a great number of *Colias Edusa*; the latter I shall be glad to exchange with any entomologist who may happen to have duplicates of the of the genus *Thecla*.—J. J. Reeve; Newhaven, Sussex, November 1, 1855.

Capture of Argynnis Lathonia in Norfolk.—In accordance with Mr. John Scott's suggestion in the 'Zoologist' (Zool. 4873), I beg to record the capture of two specimens of *Argynnis Lathonia*, about six years back, in a gravel-pit, near Harleston, in Norfolk: one of them is in Mr. J. Musckett's cabinet at Harleston; the other, which is a little damaged, in my own.—*Id.*

Mr. Scott's Note on Argynnis Lathonia.—I clearly understand the object of Mr. Scott's suggestion on the subject of *Lathonia*, but I do not think it would answer the purpose which the writer has in view. I saw a process only a few days ago of cutting light sovereigns, and I think the same might be practised with great advantage on the so-called "British" *Lathonias* and *Daplidices*. I would suggest that a committee of three be appointed to examine every specimen of such rarities, and that the committee be armed with scissors and absolute power to adjudicate on the authenticity of each specimen, and, if found a forgery, to cut each of the four wings transversely in half, and return the specimen thus mutilated to its lawful owner: the specimen might be mended with little trouble, but would ever afterwards bear the brand of being a forgery.—Edward Newman.

Double-broodedness of Notodonta camelina and Clostera reclusa.—In Mr. Edwin Shepherd's letter in the November number of the 'Zoologist' (Zool. 4899) on the "vexatissima quæstio" respecting *Gonepteryx Rhamni*, he seems to infer that *Notodonta camelina* is not double-brooded. That it was double-brooded I had long suspected, and have this year proved it to be a fact. On the 26th of May I found four eggs of some species of *Notodonta* on a birch-bush at Hampstead: I took especial care of them, in the fond hope that they might produce *Carmelita*. As may be expected, my hopes were blighted, "Parturiunt montes et nascitur Camelina." The larvæ were full-fed and spun up the end of July, and the perfect insects emerged

about the middle of August. One of the moths was a female, and most certainly was not barren. Of the double-broodedness of *G. Rhamni* I know nothing, having had but little opportunity of examining its habits: so many entomologists have, however, entered the field, that I feel quite content to leave them to fight the matter out without entering the lists myself. I am decidedly, however, of opinion that many of those insects which we generally suppose to be single-brooded are occasionally (I will not say always) double-brooded: *Clostera reclusa*, for instance, is, I believe, generally considered to be single-brooded, but that the contrary is the case I have little or no doubt, and I think that the following facts will go far to prove the correctness of my supposition. On the 23rd of June I found a small brood of the larva of *Clostera reclusa* feeding upon aspen in the Crown Woods near Shooter's Hill: some of them were full grown, and the majority nearly so. These larvæ all produced moths during the month of July: they none of them remained in the pupæ more than ten days. Now, does it not seem probable that the eggs laid by these moths would have produced larvæ which would have been full grown in September and October, the usual time for finding the larvæ of *Clostera reclusa*: though the females laid plenty of eggs, they were unfortunately none of them fertile, so that I was unable to prove it as a fact. Surely the larvæ cannot be found of all sizes from May to November (for I have two or three now feeding, out of a few which I took on the 16th of October in the same place as the June brood), and yet produce only one brood of moths. I may add that, at the beginning of June, Mr. Bond gave me a few impregnated eggs of *Clostera reclusa* laid by moths which he was then breeding from last year's pupæ. From the larvæ reared from these eggs I bred a male insect on the 25th of October. I do not lay much stress upon this circumstance, because I know that the pupæ of the *Bombyces* are sometimes subject to premature autumnal maturity. Is it not, however, possible that there may be a very late brood of *Clostera reclusa*, the eggs of which remain dormant during the winter. I am otherwise at a loss how to account for full-grown larvæ as early as the 23rd of June, particularly after such a cold spring as that of the present year. Perhaps some of my entomological brethren can enlighten me a little.—*H. Harpur Crewe; Rossway, near Great Berkhamstead, Herts, November 7, 1855.*

Capture of Callimorpha Hera on the Coast of Sussex.—I beg to record, in the pages of the 'Zoologist,' the capture of a single specimen of *Callimorpha Hera* on the wing, in this town, on the 5th of September, 1855. I have presented the specimen to my friend Mr. H. Cooke, of Brighton, in return for his kind assistance to me in forming my small collection.—*J. J. Reeve; Newhaven, Sussex, November 1, 1855.*

Spiraea Ulmaria a Food-plant of Lampronia prælatella.—The larva of *Lampronia prælatella* "patronises this plant," as well as the wild strawberry and avens: I collected, a few weeks ago, a number of its cases, the larvæ in which were feeding on the radical leaves.—*George Wailes; Newcastle, November 15, 1855.*

Occurrence of Plutella annulatella at Newcastle in 1854.—It appears this beautiful species is still as scarce in cabinets as when I discovered its only English locality about thirty years ago, and then supplied, I believe, all the specimens in British collections, except Mr. Curtis's, who took it in Scotland. It seems to be equally rare or local on the Continent, where it bears the more appropriate name of "*P. bicingulata*," derived no doubt from the two white spaces or rings on the antennæ, which evidently have been overlooked in this country, probably owing to the paucity of specimens examined. I took it again in considerable numbers in 1854, but many of the specimens had been

long on the wing and were somewhat wasted, and the long continuance of severe storms at the time of its appearance this year rendered fine specimens very rare, so that many of my duplicates are not *quite* so beautiful as I could wish.—*Id.*

Note on Tinea ochraceella.—I expected to have met with this species in our hill district, where the Formicaria are almost as numerous and as large as those at Rannoch; but although I searched them thoroughly, at the same time of the year as I took the species abundantly at its Scotch locality last year, I could not discover a single specimen. I may mention that a search at Rannoch the end of last August was equally unsuccessful: they were all over for the season.—*Id.*

Occurrence of Peronea caledoniana near Newcastle.—I took this at the middle of September, 1854, on one of our mountain heaths: it was a cloudy day, and they were flying abundantly over the heather: the previous day had been a hurricane of wind and rain, and the specimens were a good deal worn. On my visit a little earlier this season it was “blowing a gale,” and I only secured a few by beating them up.—*Id.*

Occurrence of Anthrax Hottentota in Lancashire.—On the 12th of July last I captured Anthrax Hottentota, of both sexes, in abundance, on the sand-hills near Formby, Lancashire.—*Henry H. Higgins; Rainhill, Prescot, Lancashire, November 3, 1855.*

Duplicate Micro-Lepidoptera.—The offer of duplicate Colymbetes given in the September number of the ‘Zoologist’ has hitherto found no followers; I have for several years been in the habit of sending lists of my duplicates to my correspondents, which I have found a long, tedious and sometimes thankless operation (on one occasion an eminent entomologist abusing me for sending him a list of my duplicates), and it will be a great convenience to me if my list appears in print this year in the pages of the ‘Zoologist’—those can then make use of it that like, and those that don’t like can let it alone. My absence on the Continent during a whole month of last summer necessarily diminished, to a considerable extent, my doings at home; still I have so many trusty scouts constantly on the look-out in various parts of the country, that scarcely a day passes during the season that the post does not bring me living larvæ of some sort or other, and by this means a store is frequently accumulated of bred specimens of species but a few years ago considered rarities. The advantages attending the transmission of insects by post whilst in the larva or pupa state is obvious; they travel more safely, and by breeding and setting the perfect insects I can frequently obtain finer specimens than by trusting these processes to the tender manipulations of less-practised Micro-Lepidopterists. Of all the following species I have duplicates; in some instances the duplicates are few in number, and will probably hardly supply the first half-dozen applicants; but by hearing that such and such species are in great demand I shall be led to collect them more diligently during the ensuing season, so I would wish each entomologist who wishes for any of the following to enumerate them boldly, specially designating such species as he may not at present possess. This appeal is not confined to my existing correspondents, and I hope no collectors are too modest to apply.

Ochsenheimeria Birdella	Gelechia affinis	Argyresthia conjugella
Plutella porrectella	„ domestica	Gracilaria omissella
Depressaria umbellana	„ leucatella	Ornix avellanella
„ angelicella	„ Mouffetella	Coleophora alcyonipennella
„ applana	„ anthyllidella	„ lixella
„ nervosa	„ næviferella	„ anatipennella
Gelechia rufescens	Butalis fuscoænea	„ discordella

<i>Coleophora troglodytella</i>	<i>Lithocletis salicolella</i>	<i>Nepticula viscerella</i>
“ <i>lineolea</i>	“ <i>carpinicolella</i>	“ <i>catharticella</i>
“ <i>albitarsella</i>	“ <i>quercifoliella</i>	“ <i>Septembrella</i>
“ <i>solitariella</i>	“ <i>Messaniella</i>	“ <i>floslactella</i>
“ <i>limosipennella</i>	“ <i>corylifoliella</i>	“ <i>Salicis</i>
<i>Bedellia somnulentella</i>	“ <i>alnifoliella</i>	“ <i>microtheriella</i>
<i>Chauliodus chærophyllellus</i>	“ <i>stettinensis</i>	“ <i>plagicorella</i>
<i>Laverna ochraceella</i>	<i>Phylloconistis suffusella</i>	“ <i>Tityrella</i>
<i>Elachista cerusella</i>	<i>Cemostoma scitella</i>	“ <i>angulifasciella</i>
“ <i>rufocinerea</i>	<i>Nepticula ruficapitella</i>	“ <i>marginicolella</i>
<i>Lithocletis lautella</i>	“ <i>pygmælla</i>	“ <i>aurella</i> .
“ <i>Coryli</i>		

Those who are overrun with specimens of any of the following may send some of their superfluities to the undersigned, who will thankfully receive them: those to which an asterisk is prefixed he does not possess:—

<i>Diplodoma marginepunctella</i>	<i>Eidophasia Messingiella</i>	* <i>Gelechia littarella</i>
* <i>Euplocamus Boleti</i>	* <i>Cerostoma horridella</i>	“ <i>atrella</i>
<i>Tinea imella</i>	“ <i>scabrella</i>	* “ <i>suffusella</i>
* “ <i>monachella</i>	* “ <i>asperella</i>	“ <i>lucidella</i>
“ <i>albipunctella</i>	<i>Depressaria carduella</i>	* “ <i>nigricostella</i>
* “ <i>simpliciella</i>	“ <i>granulosella</i>	“ <i>pictella</i>
“ <i>nigripunctella</i>	“ <i>pulcherrimella</i>	“ <i>brizella</i>
“ <i>argentimaculella</i>	“ <i>Douglasella</i>	* <i>Anarsia Genistæ</i>
<i>Lampronia luzella</i>	“ <i>pastinacella</i>	<i>Ypsolophus fasciellus</i>
* <i>Lamprosetia verhuellella</i>	<i>Psoricoptera gibbosella</i>	* <i>Aplota palpella</i>
* <i>Incurvaria tenuicornis</i>	<i>Gelechia inornatella</i>	* <i>Sophronia humerella</i>
<i>Micropteryx mansuetella</i>	“ <i>nigra</i>	Œ <i>Cephora similella</i>
“ <i>Sparmannella</i>	“ <i>fumatella</i>	* “ <i>Woodiella</i>
* <i>Nemophora pilella</i>	* “ <i>divisella</i>	“ <i>grandis</i>
“ <i>Metaxella</i>	* “ <i>palustrella</i>	* “ <i>formosella</i>
<i>Adela Sulzella</i>	“ <i>sororculella</i>	“ <i>lambdella</i>
<i>Nemotois cupriacellus</i>	* “ <i>cuneatella</i>	<i>Butalis variella</i>
“ <i>fasciellus</i>	“ <i>alacella</i>	“ <i>chenopodiella</i>
“ <i>minimellus</i>	“ <i>politella</i>	“ <i>incongruella</i>
<i>Swammerdamia lutarea</i>	“ <i>Galbanella</i>	<i>Acrolepia perlepидella</i>
* <i>Anesychia pusilla</i>	“ <i>humeralis</i>	“ <i>betuletella</i>
* “ <i>bipunctella</i>	* “ <i>solutella</i>	<i>Röslerstammia Erxlebella</i>
“ <i>funerella</i>	* “ <i>celerella</i>	<i>Glyphipteryx oculatella</i>
“ <i>decemguttella</i>	“ <i>maculiferella</i>	Æ <i>chmia dentella</i> .
	“ <i>punctella</i>	

I am compelled to cease my list here for very shame; I must send the remainder to the 'Zoologist' at the close of another season.—*H. T. Stainton*; *Mountsfield, Lewisham, near London, December 12, 1855.*

Duplicates of Micro-Lepidoptera.—Having supplied nearly all my usual correspondents, I find that there yet remain duplicates of some Micro-Lepidoptera, which I shall be glad to give to any one who will send a marked list, showing what species he wants. I make no bargains; but I shall be glad to receive Coleoptera, especially northern and mountain species.—*J. W. Douglas*; 6, *Kingswood Place, Lee, December 18, 1855.*

Localities of Elaphrus lapponicus and Agabus congener.—On the 13th of August last I started for Catlaw, determined, if possible, to fill up a long-lamented blank in my collection—that caused by the want of *Elaphrus lapponicus*. The greater part of the day was spent in exploring the mountain, but with little satisfaction, except that arising from the unexpected occurrence, upon the very summit, of *Megacronus cingulatus*, a species I had met with only in the lower districts of the country. Proceeding northwards I arrived in Glen Clova, a locality famous to botanists by the labours of Don and Gardiner. After spending four days in the neighbourhood I was at length rewarded by finding, on the ridge betwixt Loch Brandy and Loch Whorral, a single elytron! there, doubtless, any person of moderate industry may find the lovely creature in the month of June, and I trust the successful investigator will not forget my claim to a specimen on the day of distribution. Though forced to leave without accomplishing my chief object, I was fortunate enough to fall in with a few desirable species, as *Miscodera arctica*, *Omaseus orinomus*, *Hydroporus halensis* = *griseostriatus*, *Steph.* (one or two specimens only), *Agabus arcticus* (most of them recently fledged) and *Agabus congener*. This last species seems to be *alpine* in its predilections, for though, several years ago, I took a single specimen in Robrayston Bog, near Glasgow: the other Scotch localities with which I am acquainted in Rannoch and Mull are on rather high ground, affording the insect sparingly, while the little *peaty* pool in Clova, in which it was rather abundant, is about 2000 feet above the level of the sea. The specimens vary much both in colour and sculpture: Aubé's description of the species is full and accurate; he says it is pretty common in the north of Europe, but Erichson, Redtenbacher and Heer remark that it is rare in their respective countries.—*Robert Hislop; Blairlodge, near Falkirk, December 6, 1855.*

Actinia swimming in an inverted position on the Surface of Water.—I have often seen specimens of *Limnaea stagnalis* and other fresh-water mollusks swimming on the surface of my diminutive water-gardens, with their crawling disks exposed to the air. I have always been and still am completely puzzled both as to the *cui bono* and the *modus operandi* of this exhibition: I have never yet discovered for what good purpose or by what means the pleasing feat is performed. This, however, is merely the peroration. Yesterday, being Sunday, the 18th of November, my son called my attention to a mature, indeed venerable, specimen of *Actinia Mesembryanthemum*, indulging himself in a similar vagary. After having been quietly moored to a rock for some twelve months or more, he seems to have become possessed of a wandering spirit—to have heaved anchor—and to have cast himself loose upon the waters. There he was majestically and slowly gliding under the surface, for all the world like a ship keel upwards and with all her sails set, for his tentacles were spread abroad in the waters below, with as much complacency as if his base of operations were the very rock on which he had so long been vegetating. The broad disk by which he had formerly adhered was stretched to its fullest extent, and from exposure to the air had become perfectly dry. Mr. Douglas accidentally calling, his attention was invited to an exhibition as new to him as to ourselves, and the polype was soon afterwards compelled to abandon his inverted position; he sank moodily in the water, and has since returned to the usual sedentary pursuits of his kindred.—*Edward Newman.*

Observations on a Fresh-water Aquarium.

By GEORGE GUYON, Esq.

ON a former occasion you inserted some notes I forwarded on a marine aquarium of small dimensions, which I established while in this island nearly two years ago. I now purpose to send you some unconnected observations on a *fresh-water* one, maintained during the greater part of the intervening period; and to this branch of the subject I would wish to draw the attention of persons having a taste for Natural History, as, although it is certainly inferior to sea-water aquaria in little-known and curious forms, still the *fresh-water* establishment is very interesting, and has the advantage of being attainable in any inland district with the smallest possible amount of trouble: it requires much less attention than its marine relative to maintain the balance between animal and vegetable life for a lengthened period; the aquatic plants seem less liable to decomposition; and the evaporation, which must constantly take place from an exposed fluid surface, does not, as in the case of sea-water, alter its density and change the proportion of its constituents; in fact, evaporation is of no consequence, as long as sufficient water remains for the movements of the animals and submersion of the plants. If unhealthy plants are replaced with fresh (which will seldom be required), and any dead animals removed, the aquarium will continue in a flourishing state, under the influence of light, for almost any length of time.

I commenced the establishment on the 21st of August, 1854, by procuring a glass gold-fish vase of two gallons capacity, and filling it to about half with river water, which, up to my leaving Richmond (October, 1855) has never required changing. Some sand and mud obtained in the river-margin was next thrown in, together with a few stones, and it was left till the next day to settle; I then introduced some river weeds, and at the same time procured some aquatic plants from a neighbouring pond, and the live stock was commenced in the shape of a common smooth water-newt and a few specimens of *Limnæa stagnalis* and other shells; this reptile and a specimen of *Neritina fluviatilis*, accidentally introduced with the river sediment, with a water-beetle or two (*Hydroporus*), are the only *aboriginal* inhabitants of the vase now living. The newt soon became tame enough to take food offered on the point of a piece of wire, not refusing anything in the shape of fish, flesh or fowl, roast, boiled or stewed; a fly would be

readily taken, and even a crumb of bread or biscuit: after awhile it would raise its head, and seem to expect something eatable when I approached the vessel, but in taking it showed no great abilities; if the food sank on being thrown in, the newt, which usually floated with its limbs extended, never attempted to descend for it, and when the wire was thrust under to recover the food it would bite eagerly again and again at the middle of the wire, where it met the surface, without seeming to discover its want of nutritious qualities: for the first two or three months it lived constantly in the water, after which a slice of cork was thrown in, and then, having a choice, it abode on it for the greater part of the day: not unfrequently it appeared to be affected with palpitation or shortness of breath—if such an affliction extends to the newt family—at least the throat would show as many as 240 beats in the minute, a very different rate to its usual slow respiration; on these occasions it always kept the head out, and was generally on the cork, and if food was offered it would be refused, or taken with reluctance: on two occasions I found it looking very much as if seized with an attack of cramp, the limbs drawn up and the eyes closed with a very painful expression: a very interesting sight was presented when it happened to be resting at the side of the vessel with a foot touching the glass; the circulation of the blood was then clearly visible with a pocket lens, but though the red corpuscles were plainly seen returning from the points of the toes, I failed to detect them proceeding thither.

The movements of the newt appeared to me to be influenced by the electrical state of the atmosphere, at least more so than the *leech*, one of which I kept in a bottle a year or two ago without observing any of those weather-wise indications for which it enjoys a reputation: it appeared its practice to descend in the water and keep there during a storm. On the 9th of July there was thunder and lightning in the evening, and I found the newt, as I expected, totally submerged a full inch below the surface: on the 23rd of the same month it was very gloomy, and thunder at a distance, and the little météorologist, true to his habit, was under water, and remained so for three hours, so far as was observed: I made the same remark several times, and only on one occasion, when the thunder was very distant and unaccompanied with lightning, did I find it resting on its floating island. Three small sticklebacks (taken on Wimbledon Common, and conveyed home by rail in a Preston-salts bottle, held out of the carriage window to keep the contents cool) were introduced at an early period, but none survived two months: their habits were very interesting, and their

elegant shape, lively manners, and the ease with which they are procured, make them very suitable to form part of the live stock, where their pugnacity will not be injurious to their fellow-prisoners: their occupation seemed a perpetual seeking for food, in which they would often scrutinize the ground, head downwards, in an almost perpendicular position, the fins and tail quivering—varied by an occasional attack upon a comrade. I sometimes looked at them during the night, and always found them foraging. Contrary to the habit of the newt, they would readily dive after any food thrown in, and would often blow it from the mouth and seize it again with great dexterity. Whether the newt is fairly chargeable with any dark deeds connected with their disappearance, I cannot say, but on one or two occasions I observed it following them about the vessel with great determination, though at a sluggish pace that scarcely threatened their personal safety, added to which it never seized a fly or even a bit of meat without one or two bungling failures. On the other hand, either from instinct or experience, they evidently avoided its approach, while a stickleback I had some years ago would make repeated charges on a dace three times the size of the newt, and drive it about the tub. Specimens of *Limnea* and *Planorbis* bred freely; and in the spawn of the former, which was often attached to the glass, a revolving motion of the embryo could be clearly seen.

A few species of aquatic Hemiptera were introduced, and some of them were observed to make vigorous dashes towards a candle brought near the vase, following it round the glass. Unexpected forms would sometimes make their appearance, including sundry insect larvae and two species (?) of Cyprides. I once observed two young Hemiptera, not a line long, bred in the vase, each examining a Cypris, turning it over, quitting it and then returning; the Cyprides remained floating motionless: doubting if they were alive I pushed them under with a wire, and they immediately swam away; hedgehog-like, they no doubt trusted in their defensive armour, but how the surface-swimming 'mips' managed to capture them is somewhat strange. During the autumn several curious objects attached themselves to the glass above the water-level, having much the appearance of minute caraway-seeds, with a small tuft projecting from the side: I watched them for a month or two, but could not ascertain their nature. I may observe, the vase was covered with a circular piece of glass, slightly raised by bits of cork to admit air, but restrain the movements of mollusks of unsettled habits. The insertion or selection of these disjointed observations must be left entirely to your discretion—

they are given as they occur to memory, or as notes were made at the time.

GEORGE GUYON.

Ventnor, Isle of Wight,
November 20, 1855.

On the Injurious Effects of an Excess or Want of Heat and Light on the Aquarium.—Temperature is a point requiring great attention in carrying out successfully the principles of a permanent aquarium. The mean temperature of the ocean is estimated to be about 56° Fahr., and this, under ordinary circumstances, does not vary more than about 12° throughout the different seasons of the year. The causes of this equilibrium will be readily understood when we take into consideration the effects that must be produced by the continued flux and reflux of the tides, and by the enormous streams of water which must be flowing from the Arctic regions from year's end to year's end in one constant current, and which, by their movement, must necessarily cause other currents to flow in and take their place, thus forcing, as it were, the heated surface-water of the tropical seas towards the colder regions of the globe. Again, the whole surface of the earth, submersed below the ocean, is protected by this fluid coating from the effects of the cooling influences of radiation on the one hand, and from contact with the currents of the atmosphere on the other; and hence we perceive an always existent cause for the maintenance of a steady, equable temperature by the waters of the ocean throughout the year. Many of the inhabitants of the sea are very sensitive to changes of temperature, and we find that a few degrees of variation will cause them rapidly to move their position and seek some cooler or warmer spot, as the case may be. In the ocean it will be evident that the creatures have the power readily to effect this under ordinary circumstances, by seeking deeper water not liable to be affected by atmospheric influences, by partially or entirely burying themselves in the sand or shingle, or by shielding their bodies under the protecting shadow of the rocks or growing vegetation. In arranging the rock-work in the interior of the aquarium, therefore, great care should be taken to keep these points in view, and to afford as much protection as possible to the creatures from the cooling influences of radiation on the one hand, and from the heat of the sun's rays on the other. From my own experience I find that the range of temperature should not be below 50° Fahr., nor above 70°; within these limits all appears to progress healthily, but beyond these points many of the creatures are rapidly affected. During the last long-continued and severe winter, it was found very difficult, in an ordinary sitting-room having a south aspect and a good fire maintained throughout the day—the tanks being also screened at night by a blind—to prevent the powerful cooling effects from radiation on a clear frosty night; and on three several occasions, marking exactly the three severest frosts that we experienced during the winter, the thermometer, immersed in an aquarium containing about thirty gallons of water, fell as low as 45° Fahr. The shrimp and crab tribes, and the Crustaceans generally, are especially affected by these changes, and on each of the three occasions alluded to, one or two individuals perished; the larger-sized prawns, as *Palæmon serratus*, appeared to suffer more readily than the *P. Squilla*, although this might arise from the smaller ones being able to find a shelter from the radiation by concealing themselves more completely among the rock-work or vegetation. *Anthea Cereus* is also very sensitive to considerable variations of tempera-

ture, falling from its foot-hold to the bottom of the tank apparently dead. Excess of heat and also strong sunlight are likewise to be as carefully guarded against; and I may state, as an evidence of this, that on a particularly hot day during the summer of 1854, being absent from home, the servant omitted to screen a small case from the sun's rays during the hottest period of the day, and on my return I found every creature dead. It contained an *Anthea Cereus*, *Actinia Dianthus*, two specimens of *Athanas nitescens*, and several others. Too much light has also the effect of rapidly propagating several of the minute animalcules of a green colour, as the *Euglena* and its congeners, which under this influence multiply so rapidly as to render the whole water of a grass-green hue; this will at times subside to the lower part of the tank as evening approaches and disappear in the shingle bottom, but immediately the morning light shines strong upon the aquarium it will rise like a thin green cloud and diffuse itself throughout the whole of the water. Although this animalcular growth is not unhealthy, yet it causes the aquarium to present a very unsightly appearance, and prevents all observation on the habits of the inmates. The want of light, I need hardly observe, causes the rapid decay of the vegetation, and the products arising from this change are highly poisonous to animal life, the whole contents of the aquarium becoming of a black colour, and very soon of an offensive odour.*—*Robert Warington; Apothecaries' Hall, September 11, 1855.*

PROCEEDINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY.

November 5, 1855.—JOHN CURTIS, Esq., President, in the chair.

The Meeting was made Special, in pursuance of a Requisition addressed to the Council, for the purpose of considering the By-Laws relating to Associates, and it was decided that these By-Laws should be annulled.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—‘Smithsonian Contributions to Knowledge,’ Vol. vii.; ‘Eighth and Ninth Annual Reports of the Board of Regents of the Smithsonian Institution’; ‘Descriptions of some New Marine Invertebrata from the Chinese and Japanese Seas,’ by William Stimpson, Zoologist to the U. S. Surveying Expedition to the North Pacific, Japan Seas, &c., Lieut. John Rogers, Commander; all presented by the Smithsonian Institution. ‘Proceedings of the Boston Society of Natural History,’ conclusion of Vol. iv., and sheets 1 to 11 inclusive of Vol. v.; by the Society. ‘Proceedings of the New Orleans Academy of Sciences,’ Vol. i., No. 1; ‘Constitution and By-Laws of the New Orleans Academy of Sciences,’ by the Society. ‘Patent Office Report—Agriculture,’ by the United States Patent Office. ‘Ninth Annual Report of the Board of Agriculture of the State of Ohio,’ by the Ohio State Board of Agriculture. ‘The Natural History of the Tineina,’ Vol. i.; by the Editor, H. T. Stanton, Esq. ‘Proceedings of the Royal Society,’ Vol. vii. No. 15; by the Society. ‘The Zoologist’ for

* Printed in the ‘Annals and Magazine of Natural History’ for November, 1855, and communicated by the author.

November; by the Editor. 'Revue et Magasin de Zoologie,' 1855, Nos. 8 and 9; by the Editor, M. F. E. Guérin-Méneville. 'The Journal of the Society of Arts' for October; by the Society. 'The Athenæum' for October; by the Editor. 'The Literary Gazette' for October; by the Editor. 'Entomologische Zeitung' for September and October; by the Entomological Society of Stettin.

Exhibitions.

Mr. Stainton exhibited, on behalf of Mr. Winter, a specimen of *Phlogophora emporea*, a *Noctua* new to Britain, recently taken by him at sugar near Brighton; also some extraordinary varieties of *Agrotis segetum* and *A. exclamacionis*. Mr. Winter also sent for exhibition a fine female specimen of *Ennomos Alniaria*, taken on a lamp at Brighton: the only other authentic British specimen of this species hitherto known was taken on the North Foreland Lighthouse several years since, and is now in Mr. Shepherd's collection.

Mr. Stainton exhibited, on behalf of Mr. Henry Cooke, a specimen of *Polyommatus Agestis*, which closely approached the Scotch specimens known as *P. Artaxerxes*, the pupils to the ocelli on the under side being obsolete.

Mr. Samuel Stevens exhibited a new British *Tortrix*, recently taken at Hayling Island, near Havant; also specimens of *Goniodoma auroguttella*, *F.-v. R.*, taken by him in August last, in the Isle of Wight; and a specimen of *Dictyopteryx uliginosana*, *Bent.*, from Ely, Cambridgeshire: the only two specimens of this last species hitherto known were taken near Yaxley many years since, and are now in Mr. Shepherd's collection.

Mr. Westwood exhibited a specimen of the rare *Quedius dilatatus*, found in a hive of the honey-bee, and also the net-work cocoons of *Hypera rumicis*; both communicated by Professor Henslow. The President remarked that M. Gory had informed him that he once took a number of the *Quedius* in Fontainebleau Forest, in the neighbourhood of a hornet's nest. Mr. Stevens said that a specimen had recently been taken by Mr. Turner in the New Forest, in the decaying carcase of a heifer. Mr. Waterhouse observed that M. Chevrolat had informed him that he found this species at night on trees infested with the larva of *Cossus*; and Captain Parry once found a specimen in his own garden under the loose bark of a tree so infested.

Mr. Foxcroft brought for exhibition a large collection of *Lepidoptera* and *Coleoptera*, taken by him during the past season in Scotland.

Mr. Syme exhibited specimens of the rare *Sphaerites glabratus*, taken by him from Fungi at Kincardine.

Mr. Stevens stated that, on his recent visit to Paris, he found a preparation of naphtha very successfully applied to removing grease from insects: he had, since his return home, found that a similar article was manufactured at Liverpool, and sold under the name of "Copland's Rectified Borneote of Petroline;" this he had found equally as useful as the French preparation for extracting grease, and exhibited a number of *Lepidoptera* and *Coleoptera* which he had so cleaned: the highly volatile nature of these preparations is said to give them an advantage over camphrine for this purpose, in not requiring the specimens to be subsequently placed in magnesia or other absorbent powder.

Dr. Power exhibited specimens of *Notiophilus rufipes*, which species he had recently taken at Shirley, near Croydon, also near Gravesend, and at Cowley, near Uxbridge: he also exhibited an opaque female of *Hydroporus picipes*; in this species both sexes are usually glabrous.

The Rev. Hamlet Clark exhibited a new British species of *Hydroporus*, recently detected by him in the collection of Mr. Waterhouse.

Mr. Stevens exhibited a box of Coleoptera recently received from Mr. Wallace, at Borneo, containing many new and fine species, especially amongst the Longicorns.

Mr. Newman read the following notes, exhibiting the insects to which reference is made:—

Silk-spinning Acarus of the Furze, &c.

“ I beg to exhibit a mass of silk spun by a minute *Acarus*, and obligingly handed me, together with multitudes of the little specimens, by Dr. Milner Barry, of Tunbridge Wells, who writes as follows:—‘ When strolling across Rusthall Common this afternoon I noticed some red powder lying in thick cobwebs entangled in the furze: I took up some of the powder, and found it was living and moving, and consisted of myriads of vivacious red insects resembling *Acari*.’ When the mass reached my hands it was of the size and shape of a sparrow’s egg, the *Acari* running over it in all directions, and each adding to the bulk by leaving behind him a continuous thread of the finest conceivable silk. I subsequently sent the mass to Mr. Meade, the Arachnologist, who has carefully examined it, and kindly sent me the following information:—‘ The minute animals inhabiting the curious cocoon you sent me are *Acari*, belonging to the genus *Tetranychus* of Dufour, the type of which is the little red spider so injurious to plants in hot-houses and rooms, the *Acarus telarius* of Linneus: most of the species live in society, on plants, and possess the power of forming webs: Koch says, when speaking of an allied species, *Tetranychus socius*, ‘ It appears in certain years in such numbers that it covers the trunks and the branches of the lime-trees which it frequents, with such a thick web that they look as if clothed with glazed satin.’ I cannot find any description of the species sent by you, although it is closely allied to the common *Tetranychus telarius*, and I never before saw or found anything like the curious nest which it inhabits.’ Since the receipt of Mr. Meade’s note I have paid some little attention to the *Tetranychus telarius*, and find that the net-work of infinitely minute silken threads is admirably adapted to its singularly formed feet, and these are equally well adapted to the office of holding on while it perforates the cuticle of the leaf with its rostrum: its hold is so secure that no amount of washing by means of a garden-engine seems to have the effect of removing it: as I have no doubt whatever that these little creatures are exclusively vegetable-feeders, the web cannot serve, as in spiders, the purpose of securing prey, and it is, moreover, never accompanied by the glutinous particles which render the web of spiders so adhesive: as a matter of course, if the *Acari* can resist the action of a water-engine they have little to fear from the effects of rain.”

*An Australian *Bombyx* escaping from its Cocoon in England.*

“ I beg to exhibit a male specimen of the *Entometa obliqua* of Walker, an Australian moth, allied apparently to *Zeuzera*, *Œcetius* and *Psyche*: the insect has recently emerged from a sack-formed cocoon, and had it escaped and been captured on the wing it would doubtless have found a place in our catalogues. Mr. Oxley, to whom I am indebted for the loan of the specimen, exhibited the cocoon, amongst others, at one of our meetings last year, and adds the following information:—‘ Although I am unable to state at what date the cocoon in question

was collected, yet I may observe that the last cocoons of any kind that I collected in Australia were obtained in March, 1854, a month equalling the September of this country. The long period of fifteen months that this moth must have passed in the pupa state I attribute to the rigours of a passage round Cape Horn and to the intense cold of the last English winter.' In reference to this note, I may remark the pupa state in *Eriogaster*, and many allied genera, is of very inconstant and uncertain duration, and that the same irregularity may possibly take place in certain Australian Bombyces."

Abundance of Noctuidæ, &c.

Extracts were read from letters to the President from Mr. T. Allis, of York, on the abundance of *Noctuæ* generally in the North of England during the past summer; and from Mr. J. Hogg, of Stockton-on-Tees, also remarking the abundance of *Noctuæ*, and the comparative rarity this autumn of the common wasp (*Vespa vulgaris*).

Gall-fly of the Oak.

The President communicated the following note on *Cynips*:

"When Mr. Haliday visited Glanville's Wootton last month, he collected some galls from the oaks, which he put into a bag, and on the 22nd ult. he writes to me from Dublin to say that 'On examining the bag some days since I found several dozens of the *Cynips* out, but not one *Callimome*. It seems marvellous how the fly can escape through so small an orifice as it leaves, and I should like to see one emerge. I cannot identify it with any Linnean or Fabrician species, but it is the *C. lignicola** of Hartig, and the only one of that group to which the insect of the ink-gall belongs which occurs so far North as England or even Northern Germany. This group, distinguished by the pubescence extended to the posterior segments of the abdomen, includes the largest species of the genus, and those which cause the most elegant and largest galls.' This, I presume, is the *Cynips* I consider as the *C. Quercus-petioli* of Linnæus."

December 3, 1855.—JOHN CURTIS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—'The Zoologist' for December; by the Editor. 'The Entomologische Zeitung' for November; by the Entomological Society of Stettin. 'Ueber die Micropyle und den feinern Bau der Schalenhaut bei den Insekteniern'; by the Author, Prof. Rud. Leuckart, in Giessen. 'On the Illumination of the Diatomaceæ, when viewed under the Microscope'; by the Author, Thomas Sansom, A.L.S., &c. 'The Journal of the Society of Arts' for November; by the Society. 'The Literary Gazette' for November; by the Editor. 'The Athenæum' for November; by the Editor.

* "Mr. Dale's specimens have also hatched; yet, abundant as the gall now is, he had not the species before."—J. C.

Election of Members.

Octavius Pickard-Cambridge, Esq., Bloxworth House, near Blandford, Dorset, was elected a Member of, and R. B. Were, Esq., 35, Osborne Terrace, Clapham Road, and Horace Francis, Esq., 38, Upper Bedford Place, Russell Square, were elected Subscribers to, the Society.

Exhibitions.

Mr. Edwin Shepherd exhibited a beautiful pair of *Trochilium scoliformis*, *Borkhausen*, taken with other specimens by Mr. Ashworth, at Bryn Hyfryd, near Llangollen, in North Wales. This insect has just been described for the first time as British in the December number of the 'Zoologist,' p. 4928, by Mr. Newman.

Mr. Stevens exhibited a few drawings of the larvæ and pupæ of some of the Lepidoptera of Port Natal, made there by Mr. R. W. Plant; also perfect insects of some of the species, whose early states were figured.

The President exhibited some drawings of insects made by himself, and made the following communications respecting them:—

"1st. A very pretty variety of *Vanessa Urticæ*, given to me by F. Trenchard, Esq. The specimen was taken by himself 'near the entrance-gate in Bishop's Wood, Hampstead, July 21st, 1838.'

"2nd. A drawing of a caterpillar which I made when at school, and first noticed in the second edition of my 'British Entomology.' It seems to be the larva of *Sphinx Celerio*, yet it does not accord with any drawing or engraving I have seen: it is of an obscure flesh-colour, with a large round black spot on each side of the first abdominal segment, with four minute white dots on each, and the outer edges forming two straw-coloured lunules; behind each, on the second segment, is a smaller oval yellowish-white spot. The following memorandum was made at the time:—'Two of these caterpillars, from one of which this drawing was taken, were found in the arms of an old garden-chair, in a garden near Bishop's Bridge, Norwich: they began to spin up amongst some leaves in a pot on the 8th of October, 1810: they fed on the Persian willow (*Epilobium angustifolium*). In the other specimen there were five minute dots on one side and but three on the other: the white spot in my drawing is a little too large, and the tail of the other caterpillar was longer.' They were in the possession of a schoolfellow, Howard Sims, and changed to chrysalides amongst some leaves, from which the moths never emerged, owing to the frequent disturbance of them.

"3rd. A drawing of *Hygrrotus bisulcatus*, which I described in the 'Annals of Natural History,' and which is quite distinct from any of the European species that have fallen under my notice.

"4th. A drawing of the *Apion* named after me, in 1817, by the Rev. W. Kirby. I am very desirous of laying this sketch before the Society, in order to correct a mis-statement which I should be sorry to see repeated. Being at that time on a visit at Barham, I took a single specimen of an *Apion*, which Mr. Kirby decided to be unknown to him, and of which he made a detailed Latin description for publication, and I made the drawing: being in my youth at the time, Mr. Kirby paid me the compliment to name an *Apion* after me; I could not but feel gratified, and although I believe Mr. Kirby's description was never printed, Mr. Janson is quite mistaken in supposing that I had named the *Apion* after myself, or that it was a discovery since 1839, as assumed in the 'Entomologist's Annual:' the latter misstatement is corrected by the above date, and I should be sorry to be considered capable of such a

contemptible act of egotism as to name an insect after myself. The truth is, that Mr. Stephens having with queries described a mere variety of a common and very distinct species as the *Apion Curtisi*, it became necessary to identify the type, which I did by describing it in the 'Annals of Natural History' as the *Apion Curtisi* of Kirby's MSS. Whether Mr. Kirby's description, with many others of which I have copies, were handed over to Mr. Stephens with the MSS. of the Staphylinidæ, is unknown to me."

Mr. Stevens remarked that this *Apion* remained unique until he had the good fortune to take the species at Little Hampton and near Arundel.

The President also communicated the following note:—

On the Genus Conops.

"Little is known of the economy of this beautiful genus of flies, except that *C. flavipes* has been bred from the body of an *Osmia*, which had nidified in bramble-stems. Other species have also been stated to be parasitic on the *Bombii*, and *Conops auripes* is supposed to lay its eggs on the body or between the abdominal segments of *Bombus hortensis*. As there are eight or nine British species of *Conops*, some of which are occasionally tolerably plentiful, it would be very desirable that Mr. Walcott, Mr. Smith and other entomologists who pay so much attention to bees, should bear this subject in mind.

"My principal object, however, is to make known the localities of two rare species of *Conops* which are merely recorded in Mr. Walker's first volume of the Diptera in the 'Insecta Britannica' as 'Rare' and 'Very rare':—

"1. *C. macrocephala*, *Linn.*, described and figured in the 'British Entomology' in 1831, was first captured in England by Mr. Dale, who took a single specimen on the 18th of August, 1824, on the flowers of *Scabiosa succisa* in a meadow at West Hurn, Hants, and he has taken a second specimen, on the 23rd of June, 1846, on a path in Boscombe-chine, which he kindly added to my collection: I also possess another, taken last summer near Rannoch, in Perthshire, by Mr. Foxcroft. They resort to *Orchis* flowers; and all that I have seen are females.

"2. *C. nigra*, *De Geer*. This species has also been captured in Scotland, in Sutherlandshire, in June. Where Mr. Desvignes' specimen was taken Mr. Walker does not state; it is merely indicated as an English insect."

Note on Quedius dilatatus.

Mr. Westwood said, with reference to the specimen of the beetle exhibited at the last meeting, that he had received a note from Mr. Johnson (from whom, and not from Professor Henslow as reported, he had received the beetle), enclosing a note from Mr. Wighton, of Cossey Hall, stating that, although he found the insect in a bee-hive, it was in a nest of hornets built therein.

The following notes by Mr. Newman were read:—

The old Aurelians outdone.

"At the November meeting Mr. Foxcroft exhibited some mutilated specimens of *Endromis versicolor*—mutilated, I mean, by sundry tears and rents in their wings. Every entomologist knows how these fellows wander all day long 'on amorous thoughts intent.' Who has not watched them in the 'Kentish glory field' at Birch,

flying high over the heather, or dashing themselves incontinently against the polished stems of the birches? Now I know not whether our most sagacious friend had literally 'clipped the wings of Love,' but, although 'Love is (proverbially) blind,' he certainly assured us that he followed these 'blind guides,' and profited by the clipping, for it seems no amount of mutilation (of the wings) interferes with the amorous instinct, and that these cripples continued to tumble about amongst the heather and dwarf birch-trees, until they led him to female 'glories,' which he forthwith impaled. Harris, Haworth and Hatchett, our guides and philosophers in mothercraft, have bequeathed to us instructions how to employ maiden females as man-traps to decoy the unwary and too-amorous males; but this is the first time the male has turned traitor, and lent his services to disclose the virgin's bower."

Mr. Douglas remarked that once, at Wickham, Messrs. Farr, Fisher and himself took females of *Lasiocampa Rubi* by watching the spots where the males congregated.

A Fact bearing on the Function of Antennæ.

"It will be recollected that in an early Part of our 'Transactions' (Trans. Ent. Soc. ii. 229), there is a paper by the late Mr. Newport, 'On the Use of the Antennæ of Insects,' in which that eminent physiologist contends that they are auditory organs. We all admit that the subject is surrounded with difficulties, and therefore it is not very astonishing that the learned author failed to convince many of his readers, myself among the number: it has lately attracted attention from another point of view. In tetrapterous insects the antennæ are invariably two, but in some of the apterous they are four at least; in others they are altogether wanting, and it is an interesting fact, and possibly a bit of collateral evidence in favour of the feeler hypothesis, that where this is the case the legs are eight instead of six, and the first pair actually perform the part of feelers: when we watch the spider, whose sense of touch is so obvious and so exquisite as to have excited admiration in all ages, we cannot resist the conviction that, whatever other function may be entrusted to them, the anterior legs are certainly organs of feeling. In the Crustacea we have to deal with other facts and another structure: the legs are ten instead of eight or six, and none of them are either homologically or analogically the substitutes for, or representatives of, antennæ, since normal antennæ are not only present, but are always twice, and sometimes three or four times, as many as in tetrapterous hexapods. Physiologists have theorized very differently on the functions of these multiplied antennæ. Milne-Edwards considers the shorter or inner pair as auditory organs; he is confessedly influenced by the supposed auditory chamber situated at their base, and he leaves the exterior or longer pair to be considered olfactory or feeling organs; but Mr. Spence Bate, in a paper lately published in the 'Annals' (No. 91, dated July), attempts exactly to reverse this theory, contending, at great length, that the long exterior antennæ are auditory, the short interior ones olfactory. Recent observations on the living prawn (*Palæmon serratus*) throw grave doubts equally over the generally received view of Milne-Edwards and the more elaborately argued, but more hypothetical suggestion of Mr. Spence Bate. The antennal system of the prawn, although familiar to the Crustaceologist, is perhaps not equally so to the general entomologist, and therefore a brief description may not be out of place: the antennæ are eight in number; conventional and technical usage,—whether wisely or not who shall say?—reduces them to four: all are alike in structure, filiform and multiarticulate; the exterior on each

side is the longest; the other three are of different length, are united at their base, and are seated on the summit of a stout triarticulate footstalk. These three antennæ are invariably called 'branches' by the closet-naturalist; but the field-naturalist and the physiologist must of necessity call them 'antennæ' first, because not apprised of the conventional usage respecting them, and, secondly, because, reasoning on the fact that the branches of the antennæ in true insects are never articulated, they do not expect to find multiarticulate branches in the antennæ of any animal. It may be very easy to argue that the two longest of these many-jointed threads ought to be ears, and that the other six ought to be noses, or *vice versa*, but seeing how precisely they agree in structure,—seeing that the microscope fails to detect a difference,—and seeing, moreover, as we shall see, that there is no perceptible discrepancy in the mode in which the living animal may be said to handle these weapons of perception, it is very difficult to convince the matter-of-fact mind of a naturalist that the argument is conclusive or the hypothesis established. Thanks to Mr. Warington, the prawn is now as easily kept in confinement as the rabbit or the guinea-pig, and we have every opportunity of observing how he behaves himself both under congenial and adverse circumstances: under every condition the antennæ are constantly in action; always also acting in concert, as by a common impulse for a common object. Mr. Warington, in his admirable account of the prawn, in a late number of the 'Zoologist,' says that he considers the sense of smell as residing most strongly in the antennæ; and he relates, far better than I can, the wonderfully beautiful manner in which the prawn appears to hunt its food by scent. The following experiment I have often tried, and invariably with the same result:—Fix on the point of the usual feeding-fork a small piece of meat; plunge it in the sea-water near the prawn, but not near enough to touch or disturb him; then draw it through the water to the most distant part of the vessel, bring it to the surface, disengage it from the fork, and let it fall gently to the bottom. In a very few seconds the prawn becomes aware of the operation; he knows that food is or has been in his vicinity; he stands erect on his legs; he lashes the water with his antennæ, and, rising from the make-believe rock whereon he was previously resting, hovers in mid-water, still waving his hair-like antennæ until one of them has bisected the line of transit of his food: this line ascertained he follows it without hesitation; ascends to the surface; plunges to the bottom; seizes the meat with his claws and conveys it to his mouth: during the entire operation, seldom prolonged beyond a minute, the motion of all the antennæ is constant and indescribably beautiful; and it would require a far keener eye, a far more vivid imagination than mine, to detect or to suppose an auditory faculty exercised by some of them and an olfactory one by others. A second and even a third prawn will sometimes follow the trail after the first has passed, and I have seen three at once in active pursuit, like fox-hounds running with the scent breast-high. It is difficult in such a case as this to escape the conviction that the antennæ ascertain the course to be taken: to see the creature would remove the doubts of the most sceptical on this point; at first all the antennæ are porrected, but when the trail is once struck, and the pace of the hunter consequently improved, pair after pair bend back, with the rapidity of the motion. It is equally difficult to imagine that the passage of the meat through the water has left a sound: savour or odour are probable, sound certainly improbable. Thus as, in the first instance, we are willing to believe that the antennæ guide the creature to its food, so, in the second place, we are willing to conclude that the senses of touch and smell are those most likely to be called into action by a substance totally incapable of producing sound."

Mr. Westwood remarked, that whereas authors had given the number of antennæ in the prawn as four, Mr. Newman had doubled it, and to arrive at this conclusion he must have taken the threefold branches of two of them as distinct organs.

Mr. Lubbock, in continuation, said that, on this hypothesis, the number of legs should be quoted as twenty instead of ten.

Read also two papers by Mr. Newman:—

‘*Description of two New Species of Thrips.*’—Specimens of these insects were taken in a jungle near Mysore, on the leaves of a species of *Anacardium*, by Major Hamilton, and were sent by that gentleman inclosed in a letter to the Secretary.

‘*Descriptions of some Australian Lepidoptera.*’—In this paper the author has described fifteen new species of Lepidoptera, taken by Mr. Oxley on the Mount Alexander range, in the colony of Victoria.

Note on Oak-galls.

Mr. Westwood read the following extract from the ‘Gardener’s Chronicle’ of December 1st:—

“I believe that it was only last year that the attention of the Entomological Society of London was called to the existence of the hard oak-gall (*Cynips Quercus-petiolii*, Linn.) in this country, though previously noticed by Mr. Westwood. But surely it must have been of rare occurrence in this country until of late years, or it would have been observed before; and even now I believe it is confined to the southern counties of England. At all events I have never seen it in the midland counties, or indeed north of Somersetshire, and I should much wish to know if any one has hitherto seen this gall-nut further inland than I have mentioned. This may be important to know, as I believe the range of the gall-nut is extending, and with obvious injury to young oak plantations, so that the gall-fly that produces the nut is becoming an absolute pest in Devonshire and Somersetshire, and I am led to inquire if anything can be done to arrest its progress. It is very different from the innocuous soft galls upon the leaves, seldom very numerous, and dropping off with the foliage in the autumn. But these gall-nuts of *C. Quercus-petiolii* are mostly persistent upon the tree, and continue there for a long time hard as bullets. They seize upon the young shoots of the year, often the leading shoot in young trees, and cluster at its termination, thus stopping the expansion of the buds by taking up their nutriment, and keeping the trees in a dwarf state. I have now before me young shoots that are terminated by eight or nine of these hard brown galls clustered together; and I recently noticed in the oak plantations on Worle Hill, near Weston-super-Mare, that many young oaks had been quite ruined by their leading shoots being thus loaded, and some were absolutely dead. Now I have reason to believe that this attack upon the oaks, at least in this plantation, is of recent origin. Four years ago I first observed a few on two or three trees, and looked upon them as a curiosity; last year I was surprised to observe many more, and the present autumn, in walking through one portion of the plantations only, and without going out of the path, I counted 91 trees that were more or less subjected to this scourge—for thus it has become. Some, it is true, had only about a score of galls or so upon them, but many had hundreds clustered upon their branches thick as grapes, and the smaller trees were evidently drooping and checked in their growth by the absorbing villainous galls. Some of the trees were actually withered and dead, and others had their leading

shoots killed, with the evident cause burdened upon them. It is clear to me that fresh trees are attacked every year by the increasing insect that produces the galls, and what can be done to stay their assaults? Though I only counted 91 trees in the Worle Hill plantations, I dare say I could have doubled this number by going deeper within the coppice; but say that only these 91 oaks had 50 gall-nuts on a tree—although many had hundreds of them—that only would give more than 4500 of the Cynips to commence the next season with, so that next year instead of only 91 trees attacked I may expect to find thousands, on every tree perhaps throughout the plantations. The mischief is that the oaks are certainly rendered barren by these hard gall-nuts, and wherever they occurred on the larger trees there were no acorns at all produced. It has been suggested that these gall-nuts may be used in the manufacture of ink, but I should doubt to such a profitable extent as to keep the oaks entirely for that purpose; and if not it is but a poor consolation to have ink produced only to record the destruction of plantations made and kept up at some expense in the hope of good timber being some day ripe for sale. Can any suggestion, then, be made upon the subject now, before the Cynipidal hordes have spread to all the oak trees in the country, whether of *Quercus robur* or *Q. sessiliflora*?—*Sylvanus, St. John's, near Worcester.*"

Note on Paussidae.

Mr. Stevens read the following extract of a letter from Mr. R. W. Plant, dated Port Natal, April 16, 1855:—

"In the box I now send you will find forty-seven or forty-eight Paussidae: this is an uncommon piece of good fortune, and I must give you the history of this lot. I stumbled on the locality by accident, about three months ago, and picked up six. I revisited the spot for several days, though I had five miles to go, without seeing another, till, remembering they preferred sultry weather, I watched for the next opportunity, and was rewarded with ten; afterwards the approach of a thunder-storm was the signal to start, and beside my beetles I generally got a drenching. Respecting their habits I think the notion that they live with the ants, or are at all desirous of their society, is an error: all that I saw were close prisoners and jealously guarded: at first my anxiety to secure them prevented much close or cool observation, but as my box filled my curiosity revived, and at last it was possible to command myself sufficiently to gratify it. The beetles are in the bottom of the tufts of grass, and, owing to the small size and matted nature of the herbage, are very difficult to discover in that position, but it is the business of the ants to find them, and well they perform it. Their holes are usually along the edge of the grass (or at least it is there only they are to be seen), and as each unlucky culprit of a Paussus is found, five or six or more of the ants seize upon and drag him off to their nest. I have seen the beetles, in their efforts to escape, struggle out of the holes, but they are soon overtaken and brought back again. The ants do not kill them on the spot, as they do some other creatures, simply because they can convey them home alive, and the beetle does not seem to possess or use any means of injuring the ants, trusting only to his strength in the struggle, and is consequently soon overpowered by the number of what I take to be his enemies. At first it would appear easy to solve the question by opening the the ants' nests; but as the soil breaks you lose the trace, and they are usually very deep, so that nothing very definite results. I found pieces of elytra, but whether from beetles that had died naturally or had been killed I cannot say. The sum of

my observations, therefore, amounts to this,—the Paussi do not seek the ants nor remain with them voluntarily; on the contrary, they use every possible exertion to escape, though not one that I saw succeeded in doing so; they are captives to the ants; and for what other purpose should the latter toil in their capture, but in the pursuit of their natural instinct to secure food wherever it is offered?"

Mr. Stainton read a paper intituled 'On the Spirit with which Scientific Books should be Read and Studied.'

Part 6., Vol. iii., n.s., of the Society's 'Transactions,' recently published, was on the table.—J. W. D.

SOCIETY OF BRITISH ENTOMOLOGISTS.

November 2, 1855.—Mr. HARDING, President, in the chair.

Mr. Biggs was elected a subscriber to the Society.

The President announced that he had received from E. W. Buxton, Esq., a pair of *Lithosia muscerda* for the Society's cabinet.

The President exhibited *Depressaria costosa* and *D. umbellana*, bred from Fungi; *D. granulosella*, bred from wild parsley; *Gelechia basalis*, bred from thorny sallow; *Sciaphila perletana*, from wild marjoram, thistles and various plants; *Sciaphila subiectana*, from the small bugloss.

The President remarked that while on the coast of Kent he took a pupa in a stalk *Eupatorium cannabinum*, which produced a specimen of *Pterophorus Acanthodactylus*; he believed the habits of this insect were not known before.

The President also exhibited some specimens of *Colias Edusa*, with pupæ-cases; these, with *Colias Hyale*, were taken in some profusion near Darenth Wood.

Mr. Jobson exhibited some specimens of *Colias Hyale* and *C. Edusa*; also specimens of *Trochilium cynipiformis*, bred from the oak; *T. formiciformis*, bred from the apple; and *T. myopæformis*, bred from the willow: *Zeuzera Æsculi* and a species of *Adela*, taken near Darenth.

November 6, 1855.—Mr. HARDING, President, in the chair.

The President exhibited a box of insects, captured in various parts of the country; among them were many of our rarest Lepidoptera. He likewise exhibited a box of insects taken at Darenth, on the 26th of October, in three hours' collecting; among them were *Petasia cassinea*, *Himera pennaria*, *Cheimatobia dilutaria*, *Peronea ferrugana*, *Simaëthis pariana*, *Cheimabacche phryganella*, *Depressaria arenella*, *D. propinquella*, *D. umbellana* and *D. carduella*, *Gracillaria stigmatella*, *Chauliodus chærophyllellus* and *Cerostoma radiatella*,—showing that something is to be obtained even at this season.

The Secretary announced the donation from Mr. Stainton of the first volume of his 'Natural History of the British Tineina,' and a vote of thanks to the donor was unanimously carried.—J. T. N.

CORNWALL NATURAL HISTORY AND ANTIQUARIAN SOCIETY.

Anniversary Meeting, November, 1855.—The President read the following memorandum, from the pen of Mr. R. Q. Couch:—

New Facts on the Ecdysis or Moulting of Crustacea.

“ It is well known that, for a crab to grow, it is necessary that it should cast off its old shell: this it does entire; even the lining of the eyes, lungs, stomach, &c., are all cast off; and thus, after the creature has escaped, the shell seems as perfect as the animal itself; but I could never understand how that broad flat surface inside each claw could be got rid of without injury to the new claw; however, by attentively watching the process in several instances, I observed that in the act of drawing out the new claw the edge is cut through by these flat horny plates, the divided parts immediately closing again, and speedily becoming so adherent as to preclude their being reopened. I have observed another fact:—When crabs cast off their claws and get new ones, the process can take place only in the joint which is nearest the body: if any other be injured they bleed to death; but if the nearest joint be removed there is little blood lost, and over the wound a thin film forms, in the middle of which is a tubercle. The common opinion among naturalists appears to be that the new claw immediately begins to form, and at the next casting of the shell it is perfected, though it be small; but this is incorrect: when the old claw is separated the scar immediately forms, and remains till the creature casts its shell. After the shell is cast the tubercle in the centre of the scar suddenly enlarges, and under it may be discovered a small claw doubled on itself beneath the membrane of the scar: this remains in a soft state until the crab again casts its shell, when the new claw is set at liberty, is straightened out, and becomes hard and calcareous like other parts of the body; so that a claw, instead of being renewed and perfected at once, or at the first casting of the shell, is not so in reality until the shell has been cast the second time.”

Mr. E. H. Rodd communicated the following account of

Ornithological Captures during the Past Year.

“ The interval between our last annual meeting and the present has been productive of ornithological occurrences in this district quite worthy of notice. The severity of the last winter, almost unparalleled for extent and duration, caused a vast influx of birds, both of the land and water tribes, not only from the northern regions of Europe, but also from our own inland districts. Those of the thrush family were especially remarkable, and so concentrated were the redwings and fieldfares in the Land’s End district after the frost had lasted some time, that even at Truro the entire absence of these birds, and nearly of the whole of our common field birds, was the subject of observation. The commoner species of wild fowl flocked in innumerable numbers to our district; but it was observed that there was not such an accession of the rarer Anatidæ as might have been expected. Woodcocks and snipes were everywhere to be found, and the former were observed, from exhaustion and famine, to be strutting about on grass plots adjoining coverts, and even close to houses, seeking for their sustenance like barn-door fowls. The intense frosts, after cementing all the more exposed ground, at last closed up all the avenues of the woodcocks’ sources of sustenance in warm sheltered valleys, when, at last, these, with other birds, were often found dead, always

more or less exhausted, and with scarcely any flesh on their bodies. Amongst birds of unusual occurrence in this neighbourhood at that time were large numbers of the brambling (*Montifringilla*)—a species that seldom leaves the northern English counties except in very rigorous winters. In nearly all the farm-yards in the neighbourhood of Penzance were these beautiful finches to be seen. During the past year the following remarkable birds have been noticed:—Rosecoloured starling; Land's End, &c.: four instances. Solitary snipe; Cold Harbour Moor, Towednack: not hitherto recorded in the Cornish Fauna. Schinz's *tringa*; Scilly. Hawfinch; Scilly. Whitefronted wild geese; Scilly. Honey buzzard; Carclew."

Mr. R. Q. Couch, after stating that he had prepared a paper on the subject, which would appear in the Society's 'Report,' read the following abstract:—

On the Metamorphoses of Crustacea.

Mr. Couch prefaced the reading of his abstract by stating that the subject was now attracting much of the attention of naturalists. Professor Bell had given, in his work on the Crustacea lately finished, a summary of all that was known on the subject down to the present year, and had expressed an intention of bringing regularly before the Linnean Society such additional information as he could collect: he had already quoted from the Reports of this Society, and was desirous of procuring as much additional information from it as this Society could give. The early part of this paper was occupied with a brief recapitulation of the doctrine of the metamorphoses of crabs and lobsters, as formerly described by the author, and which is now acknowledged by all authorities. He referred to Professor Bell's work on the Crustacea, in which the whole process is particularly described; but the author remarked that all previous researches had been directed especially to the establishment of the doctrine of metamorphosis and to the particular description of each species. It was his intention in future to give figures and specific descriptions of every species: for as the young, in their partially developed form, are free, and move about in the surrounding waters, they are presented to the researches of the naturalist as species or fully-formed animals, and in times past have been described as such; and thus species, and even genera, of animals have been unnecessarily multiplied. The paper then described minutely the early states of the species mentioned above, and dwelt elaborately upon the young state of several species of *Mysis* which do not undergo a change.

Mr. R. Q. Couch contributed the following

Notice of the Capture of Planes Linnæana in Mount's Bay.

"The occurrence of *Planes Linnæana* in Mount's Bay is well worthy the attention of this Society, not only from its extreme rarity as a British species, but also on account of the probable source whence it was derived. There are three specimens in the British Museum, placed there by Dr. Leech; these were probably obtained from the Devonshire coast, and are all, I believe, that can be said to have been recognized on our shores, though I think there is a specimen in the Museum at Plymouth. Some of the smaller specimens which have been shown me as belonging to this species, and which have been taken both in Cornwall and Devonshire, have, on examination, turned out to be the young of *Carcinas Mænas*, just as it has begun to assume the adult specific markings. Such specimens I have frequently captured in Mount's Bay

among the tangle at the roots of the *Laminaria digitata*, and have afterwards reared them into the full adult characteristics. I am of opinion that the *Planes Linnæana* cannot be considered as really a British species in any other light than as an occasional visitor. If it occurred regularly it might be considered as an established portion of the Fauna of Cornwall; or if it appeared in flocks it might be looked on as a migratory species; but inasmuch as it occurs singly, and after long intervals, its occurrence must, I think, be considered, in some measure, accidental. It is chiefly found as an inhabitant of the Sargasso, or Gulf-weed, which is found in such enormous fields in the Atlantic, and which is drifted from the shores of the West Indies and the surrounding mainland."

NOTICES OF NEW BOOKS.

'General Outline of the Organization of the Animal Kingdom, and Manual of Comparative Anatomy.' By THOMAS RYMER JONES, F.R.S., Professor of Comparative Anatomy in King's College, London, late Fullerian Professor of Physiology to the Royal Institution of Great Britain, &c., &c. Second Edition. London: Van Voorst. 1855. 842 pp. 8vo; 400 engravings on wood: price £1 11s. 6d.

THIS second edition of a very useful compilation is immeasurably superior to the first, and will be hailed with pleasure by the students of comparative anatomy. Mr. Jones is a pleasing and flowery writer, and has the tact to interweave the labours of comparative anatomists with each other, and to blend them together so harmoniously that it is impossible for the student to detect the quarry from whence each stone of the well-built fabric was originally hewn. In every respect the second edition is an improvement. The author wisely expunges from the Preface itself a very uncalled-for attack on those philosophical naturalists who trace, in the multitudinous facts spread before them, evidence of a design far more important, far more indicative of Omnipotence, than the mere facts themselves, however wonderful. Mr. Jones is one of those anatomists whom philosophers must always delight to see working in the right direction, but in whom all attempts to undervalue the far-seeing and synthetic speculations of maturer minds are ill-judged: they remind one of the Cockney who, returning from a trip on the Continent, declared that French, Italians and Germans were alike badly off for a language. The objectionable paragraph is entirely removed, and is replaced by the following:—

“ Since the publication of the preceding edition, however, great and important advances have been made in our knowledge: many and

earnest have been the labourers in this enticing field, and proportionately encouraging have been the results. The indefatigable industry of Professor Owen, conspicuous in every department of our science, has, by his invaluable analysis of the vertebrate skeleton, not only remodelled the nomenclature of the osteologist, but placed in the hands of the Geological student a light wherewith to guide his steps amid the darkness of departed worlds. The improvements in our microscopes, and the zeal of our microscopists, have much advanced our knowledge of the Infusorial organisms. The researches of Van Beneden and Siebold, relative to the embryogeny of parasitic worms, open before us a new field of research, while the observations of Steenstrup, Dalyell and Agassiz on the 'alternation of generations' among the Hydriform Polyps and Acalephæ, promise results of the utmost interest to the naturalist."

Again, directly we commence the work, which really begins at Chapter II., we find that the second edition is a new work, and one which, in a great many instances, brings down the wave of discovery, if I may be allowed to use such an expression, almost to the day of publication. This is as it should be: whatever we do in science we should at least master what has been previously done; to adopt the views or to vouch for the supposed discoveries of another is a matter of mere option; to display ignorance of them is inexcusable.

In illustrations there is also a great improvement; nearly a hundred new ones are added; and many of those, which serve to illustrate other of Mr. Van Voorst's publications, have been omitted. Some of the worst entomological illustrations still remain; those at pp. 384, 390 and 403 have neither truth nor taste to recommend them; the flea at p. 350 appears to vary in the number of tarsal joints from eight as a maximum to five as a minimum: on the contrary, the anatomical illustrations of this part of the work are good and taken from the best sources.

The letter-press is always pleasing and for the most part explicit, lucid and trustworthy. Two faults, however, become apparent to the practical naturalist: first, that Mr. Jones has not always gone to the fountain-head for knowledge; secondly, that he has not always gone to those streams nearest the fountain-head, where the knowledge is most pure and undefiled. However plainly these facts may present themselves to the mind, it is neither easy nor pleasant to convince the reader of the justice of the assertion; still the attempt must be made.

First, then, as to not drawing or describing from the objects themselves, or, in other words, going to the fountain-head for knowledge:

very many of the engravings are palpable copies, and this copying sometimes leads to inextricable confusion. Thus, at page 656 is a figure, number 298: there is but one on the page; above it is this description, "The accompanying figure (fig. 298) represents the ear of a very large fish, the *Lophius piscatorius*:" below it is this inscription, "No. 298, auditory apparatus of the *Skate*." The object of giving the English name as well as the Latin is doubtless a good one, namely, to render the explanation familiar to the mind of the merest tyro in the science, but in this instance the English and Latin don't mean the same thing—they have no connexion with each other. Turning back to page 634 we are told, "The skeleton of the Cartilaginous Fishes will require a distinct notice, inasmuch as they present very remarkable peculiarities of no inconsiderable interest." This is true, and such of my readers as are not ichthyologists, and I am sure none more so than Mr. Jones himself, will be startled to learn that the Fishing Frog (*Lophius piscatorius*) is an osseous, the Skate (*Raia batis*) a cartilaginous fish: the two fishes have no points of similarity, and the names have never before been combined as meaning the same thing: the explanation beneath the figure is given in the second edition only. Now, widely as the osseous and cartilaginous structures differ from each other, highly interesting as are these differences, Mr. Jones has so contrived to confuse them in this instance that it is absolutely impossible to tell which he is describing and figuring: in fact, the conviction is irresistably forced on the mind that Mr. Jones has copied figure 298 from some other author, has forgotten what it is and whence he derived it, and of course is unable to explain.

Secondly, as to not quoting first hand. The labours of Desmarest, Gray, Gould and Waterhouse have brought to our doors a vast store of knowledge with respect to the marsupial mammals of Australia: when we regard the vast unexplored interior, and compare it with the narrow external strip which we have examined, we shall at once perceive that our knowledge is still most incomplete, but nevertheless that it is good and sound as far as it goes, and is perfectly familiar to every zealous inquirer: such zealous inquirer is puzzled on reading the following passage published at the close of 1855:—"These animals (Marsupials) are peculiar to the Australian and American continents; nay, in Australia, so anomalous in all its productions, with one or two exceptions, and these perhaps brought there by accidental importation, all the quadrupeds are constructed after the Marsupial type."—*General Outline*, p. 760, line 17. I wish the reader to refer, and to see that the passage is given not merely verbatim but entire; that is,

that there is no paragraph, either preceding or following, to qualify or modify its comprehensive scope and meaning. This brief passage contains two great and hackneyed mistakes: first, Marsupials are not peculiar to Australia and America; secondly, "all the quadrupeds, with one or two exceptions," are not constructed on the marsupial type. Let us take these propositions in order. First, the Eastern Archipelago should have been added to the geographical range of the Marsupials. The genus *Cuscus*, or that portion of the family *Phalangistidae* which has the tip of the tail naked and warty, occurs in Celebes, Amboyna, Banda, Waigiou, Timor, New Guinea and New Ireland, but *never* in Australia or America. That infinitesimal portion of New Guinea which has been explored, and explored in the most hasty and incomplete manner, produces seven marsupials, only one of which occurs in Australia; so that the proposed geographical restriction of marsupials is fallacious. Now, about the quadrupeds of Australia being altogether Marsupial: this often-repeated error has been as often satisfactorily pointed out and corrected: the *Cheiroptera* and *Glires* should have been excepted. I find the following passage in a journal, the *Natural History* of which is in general carefully compiled:—"The marsupials are peculiar to America and Australia: in Australia, if we except the dog, which has probably been introduced by man, all the *Mammalia* are marsupial." I well knew this passage was erroneous, and, as a matter of course, I knew it was not original; still, believing it the text of Mr. Jones's commentary, I determined to trace it to its source. I find that Mr. Waterhouse is the authority, and there is none higher; but the passage in question has unfortunately had its brains knocked out by the gentlemen who have borrowed it: here it is:—"Cheiroptera are not represented by any known marsupial animals, and the Rodents are represented by a single species only; *the hiatus is filled up, in both cases, by placental species, for both Bats and Rodents are tolerably numerous in Australia*, and if we except the dog, which it is probable has been introduced by man, these are the only placental *Mammalia* found on that continent." The italicised portion has been omitted in *every* citation of this passage that has come under my notice, and the inference is I think fair that Mr. Jones has been misled by one or other of the copyers, and that he is not aware that at that early period truly native placentals were known to be *tolerably*, and are now known to be *very*, numerous in Australia. It may be said that the geographical distribution of animals is not the province of the anatomist, but, if so, the subject should have been avoided altogether, not treated erroneously.

These are fair examples of the errors which have crept into this useful book, as a natural consequence of trusting too implicitly the statements of others; they will not impede the course of the student so much as they annoy the more experienced reader, for it is utterly impossible for the beginner not to reap an abundant harvest of sound knowledge from Mr. Jones's volume, and although I have attempted candidly to explain that errors are to be detected, they are neither so numerous nor so important, as to detract materially from the value of a volume which has been produced at great cost, and which is most profusely and admirably illustrated.

'The Entomologist's Annual for 1856.' London: Van Voorst. 1856.
12mo, 174 pp. letter-press; one coloured Plate: price 2s. 6d.

MOST of my readers are already aware that the 'Entomologist's Annual' has again appeared; and not a few of them already possess it through the instrumentality of the editor of the 'Zoologist.' In several particulars it is an improvement on its predecessor; but in many respects it is obnoxious to the same objection, *viz.* that it seems to strain at elevating Entomology above its rank in the Catalogue of Sciences, and Tinearism above its rank in the science of Entomology: indeed there seems not a little danger of Tinearism becoming in itself a science whose professors regard any other knowledge as superfluous.

The contents of the 'Annual' are so well known to the readers of the 'Zoologist,' through advertisements on its wrapper, that I need not formally recapitulate them. A new feature, and a pleasant one, is the list of Entomologists, and this, though perhaps unintentionally, is the most amusing chapter in the book: there is something quite diverting in the way in which the Misters and the Esquires are portioned out. Thus, Edward Newman, a printer on a very small scale, in one of the narrowest and dirtiest streets in London, is an Esquire, and many of his congeners enjoy a like dignity; whilst F. T. Hudson, the distinguished optician, of Stockwell Street, Greenwich, W. P. Hatfield, the Newark chemist, and many others of like standing, are plain Misters. A step lower still in this digested list are Entomologists who have no title at all; the examples are John Brown, E. Bull, Robert Drane, J. Fox, Finley Fraser, G. Freason, Edmund Graham, C. S. Gregson, William Harrison, George Hodge, James Holt, S. Keetley, S. Lineker, S. H. Riley, T. Riley, J. L. Rix, R. Slater, W. Spencer, Joseph Stafford and W. C. Unwin; these gentlemen are neither Misters nor Esquires: what have they done to be thus denuded of prefix and affix? perhaps, however, they are members of the Society

of Friends, eschew titles and "like to be despised." My own education has been very imperfect in a knowledge of those comparative degrees which are here so carefully preserved. J. Bladon, Esq., J. A. Brewer, Esq., Mr. Foxcroft, Mr. Standish, Joseph Stafford and W. C. Unwin are measured by some standard I have not learned; and I think Mr. Stainton should have placed, at the head of the list, the scale which he applied to entomologists when adapting them to this bed of Procrustes. One would like to know whether magnitude, gentility, learning or income was the test applied.

But it is not merely the gradus of the entomologists that affords matter of agreeable speculation; the habitats, or the want of them, is equally suggestive of hypothesis; as an instance, we learn that Mr. Saunders, although generally esteemed a well-to-do gentleman, has in reality no homestead at all. Does he sleep on the steps at Lloyd's? Or repose at the foot of the marble Huskisson? Mr. Wollaston, on the other hand, rejoices in two habitats; while studying the 'Annual' over his cozy fireside at "25, Thurloe Square, Brompton," his hair will stand on end to find that he is "At present in Madeira." The omissions are also very curious. One of our very best Lepidopterists, Mr. Bouchard; the best of our Orthopterists, Mr. G. R. Gray; the best of our Crustaceologists, Mr. R. Q. Couch; the best of our Physiologists, Mr. Bowerbank; and the *greatest*, most kind-hearted and most voluminous of all our Entomologists, Mr. Walker, are ignored altogether. Some of the minims of science might escape even a Tinearist, but how can these stars of the first magnitude be hidden from his view? Are they such *extra sizes* in knowledge, in the world's esteem, or in stature, that he could not clip them to the length of his bed?

To the names of many of the entomologists is appended a little bit of autobiography—an outline portrait of the author, in all probability, sketched by himself: thus Mr. Westwood depicts himself as "Economic Entomology, and insects of all orders from all parts of the world, especially if of peculiar form." This certainly does great credit to his head and heart. Mr. Weaver is labelled "British insects of all orders: specimens always on sale or exchange." Mr. Lubbock "studies, but has no collection:" he studies books, I presume: blind guides, Mr. Lubbock! see how Mr. Stainton handles them a few pages further on.

The chapters 'Lepidoptera, by the Editor,' and 'Observations on British Tineina,' are good and useful, bringing down our knowledge to the very day of publication. Of the same character also are 'Notes of British Geodephaga, by Mr. Dawson,' 'Notes on Aculeate Hymenoptera, by Mr. Smith,' and 'Instructions in Collecting Aculeate Hymenoptera, by Mr. Smith:' these seem to me the right materials for

an entomological annual, and we shall see whether space cannot be spared for a few extracts in future pages of the 'Zoologist.' Other chapters are not so pleasant to the mental palate: I may instance the 'Ghent to Glogau and Stettin to Schauflhausen' paper. I will not enter minutely into my cause of dislike, but simply say I do not like it. Whether this chapter is intended as ironical, amusing or instructive, whether a mere burlesque on our German brethren, or a report of the state of Tinearism in Germany, I cannot make out: the parrots, the first-rate German pudding, the tremendously hot days, the pet canaries and the gnat-bites appear to me out of place, and I cannot help thinking that something better might have been made out of a journey *through* such a country and *among* such a people.

I now arrive at the Reviews, and here amidst much that is good there is much that is very objectionable; objectionable, because harsh, ill-timed, in bad taste, and uncalled for: let the reader judge of this matter: here are some of the passages I complain of:—

I. From review of Guenée's 'Species Général des Lépidoptères, Noctuélites.' Observe, the truth of the allegation is admitted: the italics are not in the original.

"On two points the author has developed new crotchets; both highly *absurd*;—in the first place, he puts after the specific name of the species, not that of the writer who gave it that name, but that of the author who first described and figured the insect at all, whether he gave it any name or not: thus *Tryphæna pronuba*, Linnæus, becomes *Tryphæna pronuba*, Albin. Now Albin never called the insect *pronuba* at all: why then should it be called *pronuba*, Albin? Linnæus was the first who named it *pronuba*, and therefore, according to the rule universal in Zoology, except among certain *demented* Lepidopterists, we say *pronuba*, Linnæus. A more amusingly *absurd* instance of the same *nonsense* is the *Anophia Ramburii*, Clerck; Clerck never called it *Ramburii*—how forsooth could he, as Dr. Rambur was not born till long after Clerck was dead? Clerck figured this insect as *Leucomelas*, but Linnæus described another species under that name, and so the *Leucomelas*, Clerck, must necessarily take the next oldest name, *Ramburii*, Boisduval; but according to the new crotchet, appended to the name *Ramburii* must come Clerck, because he first figured the insect! *Has absurdity its limits?*"

I beg to assure Mr. Stainton that his view of applying the authority to a name is quite as incorrect as M. Guenée's; and that under no theory of nomenclature can there be a *Tryphæna pronuba* of Linnæus.

II. The entire notice of Curtis's 'British Entomology': the italics are not in the original.

"All entomologists agree in declaring the plates in this work to contain the best Entomological figures extant—they are 768 in number, embracing all the orders, and representing a species in each of the more important genera. *The letterpress is short in quantity and very deficient in quality, and, in fact, had better be considered as not there: the tyro would be led into numberless errors by resting his faith upon it.*"

I think those who are acquainted with Mr. Curtis will say that he is a consummate artist and engraver: his figures are exquisite: some explanation of them was required, and he gave, respecting each, what information he possessed. I admit it would have been far better to have made 'British Entomology' a *partnership* work, after the fashion of 'English Botany,' in which the author, Sir J. E. Smith, and the artist, Mr. Sowerby, confine themselves strictly to their respective department, but I cannot go further than this: I cannot think it desirable to notice in this harsh manner works that are the performance of the last, rather than of the present generation of men: neither can I forget that these very volumes contain descriptions of Diptera by Mr. Haliday, which, in philosophical treatment and minute accuracy, immeasurably transcend any descriptions in our language.

III. The entire notice of Westwood and Humphrey's 'British Moths:' the italics are not in the original.

"The letterpress is inferior to Stephens, and the plates far inferior to Wood: the important distinguishing feature is the figures of the larvæ; these are copied from various foreign works, and where the foreign author had mistaken or confused two larvæ the error is repeated. *The latter part of the second volume is probably a good sample of how badly a scientific book may be written, by an unscrupulous author, with little knowledge of the subject, copying wholesale from previous authors, who were themselves not trustworthy.* We trust the day when such books can be written on Entomology is now past; an inquiring spirit is abroad, which will not accept such trash, even though in the form of quartos, half-bound in morocco."

Mr. Stainton is fully aware that the Council of the Royal Society has unanimously awarded one of the two royal medals this year to Mr. Westwood for his various entomological labours; and I believe that the work above criticised was held to be the *chef-d'œuvre* of our most industrious fellow-labourer. Those entomologists whose lives shall be prolonged for another quarter of a century will be able to pronounce dispassionately on the merits of Mr. Westwood's labours. It is a curious speculation whether the Council of the Royal Society or Mr. Stainton is in the wrong: one or the other has certainly

committed a capital error, and both as certainly assume the tone of infallibility. I have my private opinion of Mr. Westwood's lucubrations, but I am not reviewing him here.

Of Kirby and Spence's 'Introduction to Entomology,' Mr. Stainton speaks as a work of two volumes, and gives the contents of Vols. I. and II. Is it possible that Mr. Stainton, the self-elected and autocratic expositor and critic of our bibliography is unacquainted with Vols. III. and IV., constituting in themselves the most learned and elaborate 'Introduction to Entomology' that was ever written?

'*Annals and Magazine of Natural History.*' Nos. 96 and 97, dated December, 1855, and January, 1856; price 2s. 6d. each. London: Taylor and Francis, Red Lion Court, Fleet Street.

No. 96 contains the following papers:—

'On the Batrachian Ranunculi of Britain.' By Charles C. Babington, M.A., F.R.S., &c.

'On the Mechanism of the Aquatic Respiration, and on the Structure of the Organs of Breathing in Invertebrate Animals.' By Thomas Williams, M.D. Lond.

'On the Genera of Mollusca, and on the Genus Assiminia in particular.' By Dr. J. E. Gray, F.R.S., &c.

'A few Remarks on the Brachiopoda.' By Thomas Davidson, Esq., F.G.S.

'On the Phenomena of the Reproduction of the Chitons.' By William Clark, Esq.

'Note on Linaria Sepium of Allman.' By Charles C. Babington, M.A., F.R.S., &c.

Bibliographical Notices:—Catalogue of the Genera and Subgenera of Birds contained in the British Museum; by G. R. Gray, F.L.S. Descriptive and Illustrated Catalogue of the Histological Series contained in the Museum of the Royal College of Surgeons; prepared for the Microscope; vol. ii.

Proceedings of Societies:—Zoological.

Miscellaneous:—Shropshire Mollusca; by J. Gwyn Jeffreys. Note on the Arrested Development of the Tadpole of the Common Frog; by W. Davies. List of Species of Mollusca obtained by Professor Goodsir from Spitzbergen; by R. M'Andrew, Esq.

No. 97 contains the following papers:—

'On the Conjugation of Coccoeis, Cymbella and Amphora, together with some Remarks on Amphiphora alata? Kg.' By H. J. Carter, Esq.

‘Description of a New Species of *Clausilia* from the neighbourhood of Cheltenham.’ By A. Schmidt.

‘Memoir on the Indian Species of Shrews.’ By Edward Blyth, Esq. With Notes by Robert F. Tomes, Esq.

‘On the Mechanism of Aquatic Respiration, and on the Structure of the Organs of Breathing in Invertebrate Animals.’ By Thomas Williams, M.D. Lond.

‘On the Origin of the Geographical Distribution of Crustacea.’ By James D. Dana. [Extracted from Silliman’s Journal.]

‘On Anthracosia, a Fossil Genus of the Family Unionidæ.’ By William King, Professor of Mineralogy and Geology in Queen’s College, Galway.

‘On the Genus *Assiminia*.’

Bibliographical Notices:—*Recherches sur les Crinoïdes du Terrain Carbonifère de la Belgique*; par L. de Koninck et H. le Hon. A Lecture on the Geological History of Newbury, Berks; by T. Rupert Jones, F.G.S.

Proceedings of Societies:—Zoological, Botanical of Edinburgh.

Miscellaneous:—Observations on the Blistering Beetles of the Neighbourhood of Monte Video; by M. A. Courbon [extracted from the *Comptes Rendus*, December 3, 1855, p. 1003]. Unusual Dearth of *Algæ* in 1855; by John Cocks. Observations on Echini perforating the Granite of Brittany; by M. Valenciennes [extracted from the *Comptes Rendus*, November 5, 1855, p. 755]. New Species of Mammals and Birds; by M. Eversmann [extracted from the *Bulletin de la Société Impériale des Naturalistes de Moscou*, 1853]. Description of a New Bird from Guatemala, forming the Type of a New Genus; by John Gould, F.R.S., &c. The late Mr. Newport.

Mr. Clark’s observations show that the young, or perhaps more properly ova, of *Chiton* are discharged continuously for about fifteen minutes, at the rate of one or two every second: they were of a pale yellow colour and subglobular form, and appeared invested with, and connected by, a viscous substance discharged simultaneously with the ova; for two days they were quiescent; on the third day they emerged from their investment and swam rapidly about the saucer; at this early date they seemed to possess very nearly the figure of the parents: on the twenty-ninth and thirtieth days all natatory motion ceased.

The *Clausilia* noticed by Professor Schmidt as having occurred at Cheltenham is the *C. Mortilleti* of Dumont, published in 1853 in the ‘*Bulletin de la Société d’Histoire Naturelle de Savoie*,’ p. 78. It is said to be at once distinguishable from all those forms which are so closely allied both to *C. ventricosa*, *C. lineolata* and *C. plicatula* by

the circumstance that the striæ at the back of the cervix are rather more distant from each other than the striæ of the penultimate whorl.

‘*Quarterly Journal of Microscopical Science, including the Transactions of the Microscopical Society of London.*’ Edited by EDWIN LANKESTER, M.D., F.R.S., F.L.S., and GEORGE BUSK, F.R.C.S.E., F.R.S., F.L.S. London: Churchill. No. XIV., dated January, 1856. 102 pp. letter-press; 7 Plates: price 4s.

This part contains the following papers:—

‘On the Formation and Development of the Vegetable Cell.’ By F. H. Wenham.

‘On Certain Conditions of Dental Tissues.’ By John Tomes, F.R.S., Surgeon-Dentist to the Middlesex Hospital.

‘On the Filamentous, Long-horned Diatomaceæ, with a Description of two new Species.’ By Thomas Brightwell, Esq., F.L.S.

‘Observations on the Practical Application of the Microscope.’ By J. Hepworth, Esq.

‘On a case of Green-Pigment Degeneration of the Heart.’ By Dr. Thudichum.

‘On the Actinophrys Sol.’ By J. Weston, Esq., H.E.I.C.

‘On the Impregnation and Germination of Algæ.’ By M. Pringsheim. [Abridged from the Reports of the Berlin Academy.]

‘On the course of the Amyloid Degeneration.’ By Rudolph Virchow. [Abstracted from the Archiv f. Patholog. Anatomie und Physiologie. Bd. viii. p. 364.]

Reviews:—‘Researches on the Structure and Formation of the Vegetable Cell;’ by Dr. Pringsheim [from the Bot. Zeitung for May, 1855]. ‘A Manual of Marine Zoology for the British Isles;’ by Philip Henry Gosse. ‘A Handbook to the Marine Aquarium;’ by Philip Henry Gosse. ‘General Outline of the Organization of the Animal Kingdom, and Manual of Comparative Anatomy;’ by Thomas Rymer Jones.

Notes and Correspondence:—Finders and Indicators. On Micro-meters applied to Microscopes. Cilia in Unicellular Plants. Remarks on Mr. Wenham’s paper on Aperture of Object-glasses. Mohl on Chlorophyll. On the Microscopical Structure of the Victoria Regia [extracted from the Proceedings of the Botanical Society of Edinburgh]. The Stomachs of the Polygastrica.

Proceedings of Societies:—Microscopical. [This report begins with the meeting of March, 1855: surely the Microscopical Society would find its own account in using a little more dispatch and activity

in the publication of its Proceedings: as it is we rarely hear of them until all interest in the subject has passed away.] Royal.

Zoophytology.

I may observe that the numbering of the Plates is conducted on some new principle that requires explanation: here is the series in this part: I., VII., VIII., VI., VII., VIII., VX.: some of these appear to face the wrong way, and the volume is referred to as Vol. IIII. These, I suppose, are the eccentricities of Microscopic genius.

The Present Position of the Salmon Question, considered Physiologically. By R. KNOX, M.D., F.R.S.E., &c.

THE salmon question has two aspects, a physiological and an economical. The first alone concerns me, and, I presume, all scientific zoologists; the second is not altogether a national question, although the Bills submitted to Parliament annually on the subject of the salmon fisheries might lead one to suppose that it was; it is a question of importance simply to the proprietors of salmon fisheries. The adding to the amount of national food is no doubt at all times a matter of importance; but the supply of salmon in the markets of Britain can scarcely ever interest the bulk of the nation: on this point I speak with diffidence, the data not being before me; but of certain facts any one may assure himself by a few judiciously-timed visits to the great markets for the supply of fish: "the increasing scarcity of salmon," "the falling off in the supplies," "the inclemency of the season," are the never-failing excuses for high prices, notwithstanding the successive discoveries of ice-packing, stake and bag-net fishing, Norwegian, Dutch and Labrador supplies. And now we are assured that all this is to be overcome by artificial breeding of the salmon: I, for one, will be delighted to see the accomplishment of this promise; the chief mover in it is one of my most esteemed personal friends, Dr. Esdaile: whatever energy, prudence, tact and an intense love of scientific truth can effect will be accomplished by my friend; but the struggle in this case seems to me to be with Nature, whose laws are either not known or not acted on when discovered. Great promises were held out in France that supplies of the finest trout, equal to any demand, were immediately to be furnished from the Moselle. Have these promises been fulfilled? During last autumn I looked into the markets of Paris and Brussels: in those of Paris I saw a very few ill-conditioned salmon; of trout there were none: in Brussels, notwithstanding its advantages of railway-

communication with the adjoining countries, salmon is seldom under six shillings a pound. I distrust the promises of speculators; with them Nature has no laws that require being noticed. From the economical, let me return to the physiological view, which must ever form the basis of every operation which has a reference to the laws of life, whether the question concerns salmon or men.

On my return from Africa and the European Continent in 1822, one of my earliest visits was to the rivers of South Scotland in which I had angled when a boy: there I, of course, found the fish called parr, as I had left it, equally mysterious—equally abundant—equally despised. To solve the difficult questions which I knew were wrapped up in the history of this little fish would have required me to reside on the banks of a salmon-river, and this I could not do. When, in 1827 or 1828, the Parliamentary Reports were published, I naturally expected that some inquirers, favourably situated, and with leisure and means at their command, would have endeavoured at least to solve, by direct observation, experiment or otherwise, some of the interesting physiological questions involved in the salmon question; but a careful perusal of all the documents then published showed me that no such inquiry had ever been attempted by any scientific person. To fill up the gap in the natural history of the salmon was, therefore, my next aim, and I selected a small troutting river, the Whitadder, as the field best adapted for *observation*; this method I chose in preference to that of *experiment*, for reasons which I have already explained. The inquiry, commenced in 1826 or 1827, has extended from that period to the present day: the young salmon in every stage of their development, from the preserves or ponds in Perthshire, are now before me, thanks to the kindness of my friend, Mr. Buist, from whom and from Dr. Esdaile I have received the fullest information in respect of the great experiment now in progress at Stormontfield. That experiment has already produced singular results: like the Egyptian antiquities, the solution of one difficulty has only led to the establishment of many more. A few words will suffice to explain this to the readers of the 'Zoologist.'

Prior to the commencement of my inquiries just alluded to, the food of the grown salmon was not known: the period of the incubation of the salmon-egg had been merely guessed at; the importance of the Entomostraca, or microscopic shell-fish, as the sole, or nearly the sole food of certain valuable fishes, as the herring, vendace, the finer lake trouts and others, had never been even surmised; but naturalists were aware that salmon ascended the fresh-water streams in order to spawn; that the period for spawning was early in winter or late in autumn;

that the young salmon appeared in the rivers in May, and quitted them for the sea, along with the spawned fish generally during that month ; that the young return during the same summer and autumn as grilses, that is, salmon of considerable size ; and that whilst in fresh-water the grown salmon constantly deteriorates.

In addition, there was a general belief that the fish called parr* was a peculiar species of the salmon-kind, although Willughby had proved experimentally, or was held to have done so, that with the milt of the male parr the ova of the grown salmon may be impregnated ; and Mr. Hutchinson, of Carlisle, in 1786, had scraped off the scales from a May smolt, and shown that underneath these scales the fish precisely resembled what we call parr. It was also generally admitted that parr were never found but in rivers frequented by salmon or salmon-trout, a statement I also firmly believed in until I had fished the Kale, the Tyne and a small stream in the vale of Guisborough. Since the period of the publication of my earliest memoirs on these subjects in the 'Transactions of the Royal Society of Edinburgh,' Mr. Young, of Inver-shin, has proved experimentally—1st. That the smolt (young salmon) of May descends to the sea and returns from the sea to the river in June or early in July—*i. e.* in from six weeks to two months—a well-grown fish of several pounds weight. This is certain : its growth from a smolt a few inches in length and a few ounces in weight to a three, four, five or even eight-pound fish is rapid beyond what could be imagined. 2nd. The same careful observer has proved that, whilst an inhabitant of the fresh waters, the salmon does not feed, but loses daily in weight and quality, and would perish but for its return to the ocean and to the use of that food which I proved many years ago to be essential to its well being. But there remains still to be solved the two difficult questions—namely, what is the age of the May smolt ? what is the winter parr ?—the fish which I proved, by direct and oft-repeated observation, to be present in salmon rivers during every month of the year ; to have the strange peculiarity of a milt developed in the male and an undeveloped roe in the female ; to be found in every part of the river, from its source to its embouchure ; and to be seemingly absent in some rivers, though frequented by salmon-trout, if not by salmon ?

The question of the age of the May smolt was some time ago considered as settled by the Drumlanrig experiments ; I never did, and appeal to all I have written and said on the subject as proofs of this assertion ; I knew these experiments not to be trustworthy, though they obtained the approbation of the Royal Society of Edinburgh. By

* In Annandale the fishermen always held the parr to be a young salmon.

these experiments it was attempted to be shown that the ova of the salmon deposited, let us say in November, 1850, left the gravel in April, 1851, and continued, under the form of little parrs, during the whole of 1851, until the month of May of 1852, when, being transformed into May smolts, they left the river for the ocean. This *theory*, for such it was, has been completely refuted — 1st, by Mr. Young, of Invershin; and, 2ndly, by the experiments now being performed at Stormontfield, in Perthshire, by my friends, Dr. Esdaile and Mr. Buist: many thousand ova of salmon were placed under the gravel in November and December, 1853: in April and May, 1854, the young from these ova had quitted the gravel, and were at large in the boxes prepared for their reception; some were allowed to escape from the boxes also provided for them, they having, from the period of their birth and appearance in the waters, been confined in boxes for nearly six weeks; at this time they measured about an inch and a half in length; that is to say, that having been confined in boxes from the period of their birth in April and May until June, they grew only about half an inch: the exact date of the admission to the ponds is not stated, a circumstance to be regretted in the history of a fish which *we know* can grow and does grow, when at liberty, from two or three ounces to four pounds weight in five or six weeks; but during the five or six weeks they remained in the boxes they did not grow, and I confess that I should have felt surprised if they had grown. From the June of 1854 they remained in the ponds until the spring (again it is not stated at what time) of 1855; by this time they had grown to three or four inches in length, but had not altered in other respects: on the 2nd of May, 1855, they were compared with *smolts* in the river, descending to the sea; they were thought not to be yet ready for their migration seaward; the two-year theory men said that they would require another year in the ponds, and so they would have had the ponds been as small as they were at Drumlanrig; but unfortunately for their theory, on the 17th of May, 1855, it was found that vast numbers of these young fish had become metamorphosed into smolts, and it was agreed on to open the pond-sluice and allow them to depart for the river and the ocean. They did not, however, commence their voyage until the 24th of May: about half became smolts, and went off to the river, and, it is presumed, to the sea; some were marked in order to ascertain if they reached the ocean; many of these must have done so, for they returned to the river in from six weeks to two months grown fish, from three and a half to eight or nine pounds in weight.

Of the 300,000 young fish about half still remain undeveloped in the ponds as parrs; in other words, and in plain language, they have not as yet undergone their last metamorphosis—they have not thrown off their generic characters common to them with all the Salmonidæ; they still retain the dentition, red spots and dark spots and parr-markings, which all the Salmonidæ, whatever they are afterwards to become, exhibit when young. Amongst these I have been assured may be found the so-called male parr with the milt fully developed, whilst in the female the roe, as usual, is at its minimum, the precise condition we find them in in the rivers themselves. Now what are these fishes? what will become of them? will they grow into salmon or remain in the ponds, retaining their generic dress—a dwarf salmon, with the further anomaly that the male acquires a full-developed milt, the female remaining with an undeveloped roe?

In the absence of positive facts required to determine these sufficiently important zoological and physiological questions, it may still be remarked that the true age of the *May smolt* of the *rivers* has not been determined; in plain terms, experimenters, without being aware of it, have been simply experimenting on the metamorphosis of the salmon in confined localities; his natural history in *the river* is still to be made out. It is no doubt quite possible that, by a physiological law peculiar, or nearly so, to the Salmonidæ, a certain amount of the ova of one incubation may become fully-developed smolts in one year, others not until two years have elapsed, and a still larger portion may never proceed beyond their generic state, and, remaining in the rivers, form, together with those whose destiny is different, that vast assemblage of small fish known by the name of parr; whilst others of the more favourably disposed in respect of their development may assume the character of May smolts in five or six weeks from the time they leave the gravel. Thus there may exist at one and the same time in a salmon-river young salmon of various ages though of one incubation, together with a certain number which may cease to grow, retaining their generic characters; but this is mere speculation and must continue to be so until the natural history of the various kinds of salmon be fully investigated. After that will come the consideration of the economical view of this question, which cannot be correctly decided until the natural history difficulties be solved. These difficulties increase instead of diminish by the late experiments at Stormont-field, for I find it asserted that *none of the young salmon*, in the *winter of the year* in which they first came *through the gravel*, had the milt *developed*, but that those which are now there, this being their second

winter, are found to have the milt largely developed, as is known to take place in such numbers in the winter parr of rivers. This curious fact, could it be altogether depended on, is an answer to those who assert that all young salmon leave the river in the May following the year of their birth, for were this the case no such thing as the *winter parr full of milt* ought any where to be found. Again, my esteemed friend, Mr. Buist, informs me by letter that the young salmon now (November, 1855) in the ponds of Stormontfield, are no larger than they were last year at this time.

It is quite a mistake to imagine that it is only at the approach of or during the winter months that certain parr acquire a largely-developed milt; a reference to my little work, 'Fish and Fishings in Scotland,' will convince any one that mere parr (young salmon?) may be found in the rivers at all seasons of the year with the milt fully developed. "On the 3rd of September thirteen parr were caught in the Tweed between the Beild Bridge and Palmudie; of these two only were females, the rest males; some were eight and a half inches long, others only four or five. In the largest the milts were enormously developed." Now to which class of smolts are we to refer these small fishes? Again, on the 30th of July, 1832, six parr were caught with the artificial fly at Romano Bridge, on the Lyne, a tributary of the Tweed: they were of the usual size, averaging probably five inches; all were males with the milts large. Do we find the grown salmon with the milts large in July? In the Eddlestone Water, a tributary of the Tweed, *smolts* abounded in the stream in vast numbers on the 29th of May; they were from four to five inches in length, and were rapidly migrating; by the 29th of the same month they had all left the stream, and yet, on the 1st of June, in the Tweed, a little lower down the stream, parr were taken seven inches and three quarters in length, whilst their brethren, three to four inches in length, had become smolts and fled to the ocean. Now examine, as I have done, hundreds and hundreds of the smolts on their way to the ocean in May, and you will never find in one of these the milt in the slightest degree altered or *exhibiting any appearance of its ever having been so*. I have stated several other difficulties in the history of the Salmonidæ in the work already quoted, and to that I beg leave to refer the reader.

Summary of Facts and Opinions.

As early as the times of Ray and Willughby it was known that the salmon ascended rivers from the ocean to deposit their ova or eggs

under the gravel of fresh-water streams, and that the young springing from these eggs appeared in the rivers as smolts, or silvery-scaled fish, in May, and in May only; but it was not determined whether the May smolt was the product of the incubation of the preceding winter or of the one or ones before that; in other words, the *age* of the *May smolt*, that is, of the young of the salmon, after it has undergone its last metamorphosis before descending to the ocean, had not been determined. This problem is still unsolved.

2. At the period I allude to it was also perfectly well known that numerous small fish, with natural history characters seemingly identical with young salmon before they have undergone their last metamorphosis, were to be found *at all times* in salmon rivers; that these questionable and dubious fish were male and female; that they were of various sizes and strongly resembled young salmon in shape; that the male acquired occasionally a well-developed milt capable of fecundating artificially the ova of a full-grown salmon, whilst, on the contrary, the roe of the female of these fishes was never found developed. Some naturalists fancied these little fishes to be a peculiar kind or species of fish; practical fishermen believed them to be simply the young of the salmon; the physiological difficulties in the way of such opinions remain just as they were. I proved, however, by direct observation that in a few days or weeks after the smolts had descended to the ocean, these peculiar salmon-resembling fish, known by various names as parr, brandling, &c., were to be taken larger than the smolts which had just left; that the milt was developed in these same fishes at times when no such thing happened in the grown salmon, and that therefore their whole history was still a mystery. To this was added the fact, which I believe to be correct, that in some salmon-frequented rivers the parr (the fish I speak of) is not found.

3. The habitat of the salmon whilst in the ocean is not known: its rapid growth in a few weeks from a May smolt to a well-grown salmon has been proved experimentally, so also has the fact that salmon do not feed in fresh waters, but fall off constantly and would perish if not permitted to return to the ocean.

4. The transplanting of salmon and salmon-trout into fresh waters, as a permanent residence, has uniformly failed.

5. The metamorphoses of the salmon from the egg to the smolt have not been accurately traced, the changes having been noted only in those subjected to restraint in artificial ponds and reservoirs. By the Drumlanrig experiments the fact was made out, that by confining the young in small fresh-water ponds the metamorphosis of the young

salmon from a parr, or, as I would call it, a *generic fish*, to a smolt might be prolonged for a year at least; some experiments made on the Dee, near Kircudbright, extended the retardation of the development to another year, and so on; or, in other words, the young of the salmon might, under certain circumstances, continue to hold their *generic* characters for an indefinite period, instead of assuming their last metamorphosis. There was nothing novel in such experiments, the same having been proved to happen in the development of the Batrachia. But that which is curious, and which still requires explanation, is, that numerous—I had almost said innumerable—small fishes, obviously affiliated, if not directly sprung from, the salmon, continue to occupy salmon rivers throughout the year, whilst thousands and thousands, not larger, and many smaller, have undergone their last metamorphosis and migrated to the unknown recesses of the ocean. Of those which migrate in May, I have never observed the roe or the milt to be in the slightest degree altered, or even to look as if it had ever undergone a change; whilst, in the dubious fish remaining in the river, the milt, as is well known, becomes highly developed. Is it a law, then, that of the ova of a single incubation a certain number become fully developed after a residence in the fresh waters of a few weeks; a certain number at the end of a year; a still greater number never, but, retaining their generic dress, continue in this dwarfish state in the fresh-water rivers? These are the appearances the question assumes at present, to solve or explain which both methods will no doubt be required, that, namely, by direct observation and that by experiment.

Economically: salmon are gregarious wild animals, submitting to no restraint; their abundance or scarcity depend on circumstances over which man has little or no control; but as they breed in confined streams, the inhabitants of all civilized countries will succeed, as is their wont and nature, in destroying them, by attacking the spawning fish and her brood. This is in accordance with man's seeming mission on earth—that of a destroyer of Nature's works: in Southern Africa you can predict the proximity of civilized man by the wilderness which moves before him, in advance, marking his all-destroying character.

R. KNOX.

Meissen House, Upper Clapton,
December, 1855.

Anecdote of a Fox.—Some six years ago Mr. Brockman and his hounds met at or near to Waldershare Park, the seat of the Earl of Guildford, and, after drawing several covers blank, came across Mr. Gordon, the gamekeeper, who, after talking the matter over with Mr. Brockman, observed, “Do you see that cedar-tree standing in the park, near to the Wilderness? A fox has lately used that tree, and possibly you now may find him.” Although the proposition seemed so preposterous, to draw for a fox in a tree, still, knowing Gordon to be a matter-of-fact man, away went the sportsman and hounds to the tree. After whooping and hallooing under it for some time, no fox was moved, and the laugh was becoming pretty general against Gordon, who, nothing daunted, then advised that a man should go up the tree, and beat it with a long stick: this was done, and, to the astonishment of the field, something at last began to move near the top, very dark, much resembling a martin-cat, and making its way from bough to bough towards the ground, when at length down plumped in front of the hounds as fine a fox as ever was seen. Away went the fox, hounds and horses, pug putting his head straight to the park, and, wonderful to relate, for the first two hundred yards the little wily animal gained upon its pursuers, showing the extraordinary speed which a fox possesses. At length the long strides of the fox-hounds began to tell, and the fox turned towards the steward’s house, when, after a whimper or two and a crash, it was killed in the steward’s garden. The narrator has now the brush of this fox suspended in his parlour—a very dark one, almost sable, with a handsome tag at the end.—*Sussex Express*, of January 5, 1856. *Communicated by the Rev. Arthur Hussey, of Rottingdean.*

Deer feeding on Horse-chestnuts.—I am surprised to see it stated (Zool. 4913), as a new or strange fact in Natural History, that deer feed on the fruit of the horse-chestnut. The truth is, and I thought it had been notorious, that they are very fond of these nuts; and on this account perhaps, as well as for the sake of ornament, horse-chestnut trees are frequently planted and cherished in parks. I could name a deer park, in which is a noble mansion; and, as I well remember to have heard many years ago, on authority that I cannot doubt, the younger members of the family were in the habit sometimes of collecting the nuts of the horse-chestnut and distributing them from their chamber windows, with a view to draw the deer near the mansion; and the deer were readily attracted by so tempting a bait. Is the origin of the name “horse-chestnut” as stated in the ‘Zoologist’ correct? And will our English horses eat the nuts? I had always supposed the epithet to have been given rather on account of the size and coarseness of the fruit, and its uneatable nature. Pigs refuse the nuts; at least I have several times tried the experiment with my own pigs, and never knew them to eat one.—*W. T. Bree; Allesley Rectory, January 12, 1856.*

Deer feeding on the Horse-chestnut.—The Rev. Arthur Hussey mentions having seen deer feeding on the fruit of the horse-chestnut. In Donnington Park are herds of fallow and red deer, both of which I have frequently seen feeding upon this fruit. It is rather an interesting sight to watch a group of fallow deer searching amongst the fallen leaves for them, which they do with considerable care: this species of deer seems particularly partial to this fruit, and they consume them daily in the autumn, as fast as they drop from the trees.—*John Joseph Briggs; King’s Newton, December 6, 1855.*

Piscivorous propensity of the Water Campagnol.—Some naturalists seem to entertain a doubt whether this animal will feed upon fish. A friend of mine assures me that frequently, when he has been fishing in the Trent, towards evening, and thrown

his fish upon the bank, a water rat has crept out of his hole and filched one or two of them, and carried them into it. He has watched a rat whilst performing this feat on several occasions.—*Id.*

Black Hawfinch.—Mr. Hall, naturalist, of the City Road, has just brought me a hawfinch, which had been kept in confinement and fed on hemp-seed for six years: its head, neck and back were quite black, and all the feathers of the breast and belly were more or less particoloured, black being intermixed with the usual colouring: abundance of instances have occurred of this change of plumage in bullfinches, but I do not recollect another in the hawfinch. It may be amusing to some of my readers to know that the owner of this bird considered it a nightingale.—*Edward Newman; January 15, 1856.*

Popular Fallacies about Birds.—The country people have a notion that cuckoos turn to hawks in the winter, and the keepers in this neighbourhood destroy them both on this account and because they suppose that in the summer the cuckoos suck pheasants' eggs. A somewhat similar idea prevails that the land rail or corn crake turns to the water rail in the winter, but I have positive evidence to the contrary, for a land rail was shot here last week, namely, on the 3rd of January: this winter occurrence of the land rail is very uncommon with us. On the same day on which the land rail was shot we saw several sea-gulls.—*J. C. Dale; Glanville's Wootton, January 12, 1856.*

Late stay of the Swallow Tribe.—In the 'Zoologist' for January, 1856, I observe that a correspondent, writing from this place, mentions the 11th of November as the day he last saw a swallow. As I have seen both swallows and martins some two or three weeks later, I will now give you the exact dates from my note-book, together with some few observations and extracts from the same, and I may possibly, at a future period (should you wish it), describe what has come under my observation with regard to the migration of swallows, during a residence of some years in this neighbourhood.

- 1839. April 21. Observed two swallows.
- 1840. April 15. Saw three swallows.
- 1841. April 27. Saw first swallow.
- " 28. Saw a martin.
- " November 3. Last swallow seen.
- 1842. April 23. Observed a swallow.
- " December 2. Saw last swallow.
- 1852. April 13. Saw first swallow. Wind E.: therm. 56°.
- " November 13. Observed a few swallows. Wind S.E.
- 1853. April 12. Observed first swallow. Wind W.: therm. 50°.
- " November 22. Saw a swallow and three martins. Wind E.
- 1854. April 15. Saw several swallows and martins.
- " September 7. Saw several sand martins.
- " November. Observed both swallows and martins till about the middle of the month.
- 1855. April 8, 4 o'clock P.M. Saw three swallows hawking over the mill-dam. Wind N.W.: therm. 59° at 1 o'clock P.M.
- " April 28. Observed two sand martins.

1855. November 24. Saw last swallows.

„ December 2, 4 o'clock p.m. Observed eight martins flying round the garden, and occasionally alighting on the perpendicular face of the wall of a house near my garden-gate, to which they would cling for a few seconds, and then, dropping off, whirl round, returning to the same spot, seemingly quite unconscious of my presence and that of several others: they seemed bent on effecting an entrance under the eaves of the house, by a small opening they had discovered near a water-pipe that had been carried through the wall: they were, I believe, all young birds of the season, as they appeared small, their tails being also shorter than in the adults; they were weak on the wing, but that may have arisen from their being benumbed by the cold, the thermometer standing at 44° only at the above hour. There had been a bright sun during the greater part of the day, but I had observed a white frost in the morning. I conclude that these late birds were merely seeking a roosting-place for the night, and not a place of concealment for the winter, although I might have been excused, according to Cuvier,* White,† &c., had I thought they were taking up their winter quarters; but I have not sufficient faith in the theory to induce me to unslate a part of the roof to seek for them, which might be done, however, at a trifling cost, provided permission were obtained.—*H. W. Hadfield; High Cliff, Ventnor, Isle of Wight, January 18, 1856.*

[Captain Hadfield's proposed notes on the migration of swallows will be very acceptable.—*E. N.*]

Anecdote of the Turtle Dove (Columba turtur).—Early in August of this year (1855), an adult specimen of the *Columba turtur* appeared among my pigeons, feeding with them by day and retiring with them to their house at night. This continued for about three weeks, during which time it showed no greater disinclination to domesticity than the fantails and other pigeons with whom it had associated. After this, however, it began to absent itself, at first for a day or so, then returning, but these periodical departures were gradually extended in duration, till at length, merely reappearing at intervals for a few hours, it finally disappeared late in September.—*W. W. Wingfield; Gulval Vicarage, near Penzance. Communicated by Edward Hearle Rodd, Esq.*

Recent occurrence of the Great Bustard in Berkshire.—On Thursday, January 3, 1856, as a boy about nine years of age was on his way from Hungerford to a lone farm about a mile off, on the road towards Salisbury, with his brother's dinner, at twelve o'clock, he saw a large red bird on the ground, fluttering about, near the edge of a piece of turnips. He went close up to the bird, and observed that it had a broken leg: he tried to take hold of it, but the bird "pecked at him, bit his fingers and put out his great wings." He caught hold of one of them, and dragged the bird along

* 'Le Règne Animal,' p. 374 (*Hirundo riparia*), "Il paraît constant qu'elle s'engourdit pendant l'hiver, et même qu'elle passe cet saison au fond de l'eau des marais."

† 'Natural History of Selborne,' p. 107 (Letter to Hon. D. Barrington, 'Migration of Swallows'), "... seem to justify you in your suspicions that at least many of the swallow kind do not leave us in the winter, but lay themselves up in a torpid state." Page 302 ('Sand Martins'), "... and gives great reason to suppose that they do not leave their wild haunts at all, but are secreted amidst the clefts and caverns of those abrupt cliffs."

the ground by it for nearly a quarter of a mile to the farm, where a farming man killed it by breaking its neck, that the boy, as he said, "might carry it easier." The boy says the bird was quite clean when he first saw it, but that he made it dirty by dragging it along the field. The bird passed through the hands of two or three persons, and came at length into the possession of W. H. Rowland, Esq., of Hungerford, who sent it up to Mr. Leadbeater, of Brewer Street, to be preserved. Mr. Rowland did me the favour to call upon me on Saturday, the 12th inst., and went with me to Brewer Street, that I might see the specimen. Mr. Leadbeater had examined the inside of the bird, and had saved the sexual part in spirit, which showed that it was a young male. The bird appeared to be about eighteen or twenty months old, and was, as I believe, a bird of the season of 1854. The fracture of the bone of the leg, with the skin torn through, about half way between the true heel and the knee, did not appear as if produced by gun shot, nor was there a single perforation in any other part of the skin of the bird. The wound was too high up to have been caused by a trap, and perhaps the accident had occurred by the bustard getting his leg entangled among the bars of sheep-hurdles, and making efforts to get loose. The wound was apparently of some days standing, and had bled considerably. That the bird was weak and exhausted may be safely inferred from its allowing a boy to drag it along the ground by the wing, so courageous and fightable as this species is known to be when in health; there was, moreover, very little blood within the skin where the neck was broken. The soft parts had been irrecoverably made away with, or I should have examined the neck with great interest.—*W. Yarrell; Ryder Street, St. James'.*

Occurrence of the Bittern at Lewes.—Two bitterns were brought me last Saturday, both killed in this parish during the week.—*G. Grantham; Barcombe, Lewes, December 22, 1855.*

Savage Conduct of a Tame Drake.—Having taken considerable trouble, for several years past, in breeding and domesticating wild ducks at this place, I have now often to boast of eighty or one hundred couple of wild ducks to be seen on the pools during the hard weather and when the smaller and less sheltered waters are frozen up: at this time of year I desire the keeper to supply the ducks with barley in the straw and grains after brewing, for them to feed upon, and this induces many of the wild ducks to remain all the year through, and to breed here in the summer months, an account of which, and of the difficulty often met with in rearing the young ones, in consequence of the large pike, crows and other vermin attacking the old birds on the nests and the young ducks when first hatched, appeared some time ago in another periodical publication; but this year I had to encounter another kind of enemy I little anticipated. In the secluded parts of the range of pools here the wild ducks are accustomed often to make their nests close to the edge of the water and underneath the ledges of projecting rocks which overhang the pools: there being, however, a well-preserved fox-covert along one side of one of the larger pools, the poor ducks, while sitting, often are taken off their nests by the foxes, and the eggs left for the rats to feed upon, which they will do most voraciously, and sometimes in the scuffle with the foxes the eggs may be seen all rolled into the water, and are then totally destroyed. Last breeding season, a farmer, whose farm-yard is but a short distance from one of the pools, from which there is a kind of horse-road down to a drinking-place for his cattle, had a couple of white Aylesbury ducks and a mallard made him a present of; these three confined themselves for several months to the farm-yard and about the ricks, and were generally put up at night time, but in an evil hour they determined to follow the path

leading to the pools, and there regale themselves with an excursion up and down the water, and pay a visit to the wild ducks which frequented the place; but though their colours were so different,—as is the case with the white and pied pheasants here,—there appeared to exist no annoyance or reluctance to allow them to approach the others, and both kinds seemed to do very well, except that the tame ducks unwisely were seen occasionally to land and preen their feathers underneath the projecting ledges of the rocks before mentioned, and close to where the foxes were accustomed to pass in their nightly perambulations, and quite within their hearing in the day time: no harm, however, occurred for a considerable time, till one of the white ducks was found one morning minus its head, the rest having been left untouched by the foxes, who had plenty of rabbits and other food to feed themselves with. How much or how long the white mallard grieved for his dear departed spouse is uncertain, for having another still left he appeared not to take on inordinately: in a few weeks afterwards his other spouse made a nest away from home, which some other tame ducks never ventured to do, and having selected a place too near to the haunts of the foxes her nursery cares were soon over, for she one night disappeared altogether, as might have been expected: her sorrowing husband now mourned for his loss in earnest, and might be seen slowly swimming all over the pool, calling, in his low subdued note, for his absent helpmate; but this proving of no avail, and having the use of his wings, he soon began to take short flights round about, and from one pool to another, calling mournfully to his lost duck, but finding no alleviation to his sorrows he immediately paid his addresses to a wild duck then sitting upon nine eggs and near hatching: so pertinacious was he in his suit that he refused the poor duck any respite, and insisted upon her quitting her nest and coming upon the pool to listen to his amorous appeals, and consort with him: this lasted for some time, till at last he actually pulled and drove the poor duck off her nest, and made her desert it and leave the place altogether, disdaining the white mallard's overtures and pretended adoration. But he was not to be baffled in pursuit of a third spouse, and he immediately took to another duck sitting on thirteen eggs, and, following out the same system with this one as with the former duck, he at last destroyed every one of the eggs, which were found strewed about under water near the nest; but here again the faithful duck would have nothing to do with this Turk-like, white-turbaned suitor. Still this inexorable mallard once more assailed a third duck, sitting, like the two former, on ten eggs, and after driving her from her nest and harassing her in every possible way, he finally forced her into a soft muddy place, from which the poor duck, after many personal assaults by the mallard, could not extricate herself, and was found smothered. Thus had this implacable animal destroyed three wild ducks' nests and one of the old birds as well, within the space of about ten days; and instead of boldly making up to some young unmarried duck or widow of the tame kind, or even wild ones, of which there were plenty about, nothing would assuage his passion but this persevering prosecution of his lawless desires, and the ultimate destruction of three anticipated hopeful families of young wild ducks—sad emblem and example of what too often happens in human life. Finding the havoc which was thus being made amongst the wild ducks, I ordered this tyrant of the waters—as nothing else would keep him in order—to be shot and given to the foxes, which was accordingly immediately done.—*W. H. Slaney;*
Hatton Hall, January, 1856.

The 'Sea-Snake Story a Fiction.'—In the November number of the 'Zoologist' (Zool. 4896) I notice an extract from an American paper, respecting the capture of the "great American snake." You have probably since learned that the account is an unmitigated hoax, manufactured by a newspaper editor, while on a summer vacation, for the purpose of furnishing material for his editorial correspondence.—*Spencer F. Baird; Smithsonian Institution, Washington, U.S., December 28, 1855.*

The supposed New Flounder.—Mr. Higgins is very fearful that it may be supposed by some readers of my note in the December number (Zool. 4914) that he has been a *particeps criminis* in the experiments there described as having been performed on the poor little flounders by the unfeeling fisher boys. I am confident that my correspondent's enthusiastic love of Natural History ought to and will protect him from any such suspicion. I cannot see how such a malversation of meaning can occur to any one. I may say that having again communicated with Mr. Higgins and Mr. Yarrell on the subject, the former still believes it distinct as a species, the latter still believes it a variety of the common flounder.—*Edward Newman.*

Antennæ of the Prawn.—In the January number of the 'Zoologist' (Zool. 4968), under the Proceedings of the Entomological Society, there is a note read by Mr. Newman as 'A fact bearing on the Function of Antennæ.' In this note the following lines occur:—"Milne-Edwards considers the shorter or inner pair (of antennæ) as auditory organs: But Mr. Spence Bate, in a paper lately published in the 'Annals' (No. 91, dated July) attempts exactly to reverse this theory, contending, at great length, that the long exterior antennæ are auditory, the shorter ones olfactory," &c. What is here placed to the account of Milne-Edwards *should have been given to Mr. Spence Bate, and vice versa.* That this is the case the following passage from Vol. I. of the 'Histoire Naturelle des Crustacés,' p. 124, will show:—"Chez la Langouste, le milieu de la membrane qui bouche l'ouverture externe du tubercule *auditif*, est occupé par une ouverture qui communique avec l'organ en forme de galette, dont il vient d'être question, et chez la plupart des Brachyures elle est remplacée en totalité par un petit disque osseux plus ou moins mobile. Dans le Maia et quelques autres Crustacés à courte queue, la disposition de cette espèce d'opercule est très curieux (pl. 12, fig. 10*), nous avons constaté, M. Audouin et moi, que de son bord antérieur il naît une lame osseuse assez large; qui s'en séparent à angle droit, se dirige en haut vers l'organ, en forme de galette, et se termine en pointe; près de sa base, ce prolongement lamelleux est percé par un grand ouverture ovalaire, et cette espèce de fenêtre est bouchée par une membrane mince et élastique, que nous appellerons *la membrane auditive interne*, et près de laquelle le nerf auditif paraît se terminer; du tubercule *auditif*, et qui, par sa forme, rappelle un peu *l'etrier de l'oreille humaine.*" Again, p. 125, "L'existence de la longue tige rigide, formée par les antennes de la seconde paire et en communication avec l'*organ auditif*, paraît être une autre circonstance de nature à faciliter la perception des sons; cette opinion avait déjà été émise par M. Strauss et nous paraît s'accorder très-bien avec divers résultats obtenus par M. Savat," &c. In the paper to which you refer as published in the 'Annals' by myself the following passage occurs:—"The

* Here Milne-Edwards figures the organ belonging to the external antenna.

next question we have to consider is to which sense either of these two sets of organs belongs; whether the upper (internal) belongs to the auditory, and the lower (external) to the olfactory, as I shall endeavour to prove, or *vice versa*, as maintained by Prof. Milne-Edwards, &c. Dr. Farre on the Macroura, Mr. Huxley on the Stomapoda, and this last, published in the 'Annals,' on the Brachyura, all by independent evidence support the idea of the external antenna being an *olfactory* organ, and therefore opposed to the whole of the Continental writers, including Blainville, Edwards and Audouin, and lately Von Siebold. The very interesting observations of Mr. Warington on the habits of the living animal directly confirm the deductions, made by us from the structural organization, that the external or second antenna is an organ of smell, and the internal or first antenna is an organ of hearing. I am sure that, in justice to me, you will communicate this to the Entomological Society, and publish the same in your next number, as correcting the mistake, in the Proceedings of the Entomological Society, which is published in the 'Zoologist,' as quoting from my paper views opposite to that which it contains.—*C. Spence Bate; Plymouth, January 8, 1856.*

[I have to express my sincere regret for the blunder which Mr. Spence Bate has pointed out, and will take care that the requisite alteration be made before the paper is reprinted in the 'Proceedings of the Entomological Society.' The reader, however, will please to observe, that, however great the unintentional injury I have done to Milne-Edwards and Mr. Spence Bate by the transposition of their clashing inferences, still my position remains intact; for my object is simply to show the difficulty which ever attends the assigning of functions to organs which have no homologues in animals with whose *senses* we are really acquainted.—*Edward Newman.*]

Captures of Lepidoptera in North Wales.—Seeing Mr. Ashworth's list in the 'Zoologist' for September, induces me to give another, having met with many species not named in his list, collected in the months of July, August and September, in the years 1853, 1854 and 1855, in the northern parts of Flintshire, Denbighshire and Carnarvonshire. To give an entire list of all I met with would not be useful, as many species common to most districts are to be met with in North Wales. A brief summary of those I have met with may not be out of place: of Papilionidæ I met with twenty-four species; in Sphingidæ I was less fortunate, having only met with four species; in Bombyces, twenty species; in Noctuidæ, one hundred species; in Pyralidæ, twenty-one species; in Geometridæ, seventy-six, one of which deserves particular notice; it is a species of *Gnophos*, allied to *obscuraria*, but much darker and larger than the southern specimens: several persons who have seen them believe they are a distinct species, but this remains yet to be proved. North Wales seems particularly rich in Eupitheciæ, having met with fourteen species myself; three other species were shown to me by Mr. Weaver, when we met in Carnarvonshire, that I had not met with. In Tortrices and Tineæ I was less fortunate, probably owing to my collecting in the later months of the summer. The following list is all I consider worth recording:—

Stilbia anomala. On wing at dusk.

Luperina furva. At sugar.

Leucania conigera. On flowers of ragwort.

Spaelotis præcox. Ditto.

„ *cataleuca.* On sugar, and on wing at mid-day.

Spaelotis pyrophila. On flowers of ragwort.

Agrotis Ashworthii. At rest on limestone rocks.

Botys terrealis. By beating herbage on limestone rocks.

Gnophos, nov. spec. At rest on limestone rocks.

Emmelesia bifasciaria. On wing at dusk.

Eupithecia distinctaria.

“ *pimpinellaria.*
“ *nanataria.*
“ *cognaria.*
“ *subfulvaria.*
“ *rufifasciaria.*

All the *Eupitheciæ* were either taken at rest or by beating for them.

Also two other species not yet named.

Peronea permutana. By beating.

Sciaphila bellana. At rest on limestone rocks.

Eupœcilia atricapitana. By beating.

Crambus falsellus. On an old stone wall.

Tinea semifulvella. By beating.

Nemotois cupriacellus. On wing at mid-day.

Gelechia desertella. In old rabbit-holes.

“ *politella.* On wing at dusk.
“ *artemisiella.* On wing all day.
“ *sequax.* Ditto.
“ *tæniarella.* Ditto.

Laverna Staintoni. On wing at dusk.

Pterophorus plagiadactylus. On wing all day.

PS. In July I captured *Plusia bractea* and *Exæreita Allisella*; in November *Crymodes Templi*; all in Cheshire.—*S. Carter*; 20, *Lower Moseley Street, Manchester*.

Singular Swarm of Vanessa Urticæ in December.—The following notice of the capture of a swarm of *Vanessa Urticæ* on the 26th of December, 1855, at the farm of Mr. Banning, Monte Video, Ballacraine, Isle of Man, was sent me by that gentleman, together with the insects themselves:—“ Whilst standing in my farm-yard on the day following Christmas-day, it being unusually fine and warm, I was suddenly astonished by the fall of more than a hundred of the accompanying butterflies. I commenced at once collecting them, and succeeded in securing more than sixty; these I have fed on sugar spread over cabbage-leaves and bran until now, and, to all appearances, those which still survive (more than forty in number) are thriving well, and in good condition.—*Alfred Rains*; *New Brighton, Cheshire, January 19, 1856.*

Remarks on Mr. Newman's Note relating to Argynnis Lathonia.—Mr. Newman's idea of appointing a triumvirate, “armed with scissors and absolute power,” is a very good one, but I doubt much whether any will avail themselves of this *sciscitation*. My notion, when I penned the first note, was that some one, against whom the “grave and reverend” charge was made, would have been first in the field, and up to this time I am so far gratified to see such good sense displayed, whether real or assumed, in not seeking to add in print what is already in black and white. In some instances men are convicted by their silence, whilst in others they are condemned by their speech. The middle path, therefore, is difficult to travel over, yet it may be safely accomplished by those who don't always require to put on “seven-league boots” when they start.—*John Scott*; *South Stockton, Stockton-on-Tees, January 1, 1856.*

Capture of Parnassius Apollo at Dover; also Argynnis Lathonia, Chrysophanus dispar and Catocala Fraxini, near Chiselhurst, in Kent.—Mr. Dale having obligingly given me a clew to the history of these splendid captures, I immediately wrote to Mr. G. B. Wollaston, of Chiselhurst, who was acquainted with the particulars, and forthwith received the following most courteous reply:—

“ Chiselhurst, February 1st, 1856.

“ My dear Sir,—As you wish for more particulars about the capture of *Parnassius*, I have been to-day to see the person who took it, and hear from his own lips all about it. He was lying on the cliffs at Dover, in the end of August or the beginning of September, 1847 or 1848 (he cannot remember which), when the butterfly settled close to him, and not having his nets with him, captured it by putting his hat over it; he then carried it to his lodgings and shut window and door, and let it go in the room and secured it. He had not the slightest idea what it was till he saw it figured in some work afterwards. The insect has all the appearance of having been taken as he describes; and as he has no object to deceive, and is a person in whom I can place implicit confidence, I have no doubt, in my own mind, that the specimen is a British one. It will probably be in my own collection before this letter reaches you, when I shall be most happy to show it to you at any time you are this way. With regard to *Argynnis Lathonia*, I have perhaps, unintentionally, misinformed Mr. Dale. It was captured in this neighbourhood, *not* by himself, but by an intimate friend and fellow-entomologist, now dead. He has taken *Colias Hyale*, female, on this common, *Chrysophanus dispar*, male, in this parish,—his friend the female: his friend also has taken *Catocala Fraxini* in the neighbourhood, and *Zeuzera Æsculi* in this parish. All these insects are in his collection, and have been taken now some years. If I have rightly described them, none of these statements need be doubted. I shall have much pleasure in giving you further particulars should you require them, and remain

“ Yours very sincerely,

“ GEO. B. WOLLASTON.”

[Mr. Wollaston being, perhaps, comparatively unknown to the Entomological world, I shall be excused if I say that he is a botanist of high standing, and of the most scrupulous veracity and accuracy. It will, I am sure, give him great pleasure to investigate the matter further and to reply to any queries that may be asked. I am quite unacquainted with Mr. Wollaston's informant, with whom the *onus probandi* now appears to rest.—*Edward Newman*].

Trochilium chrysidiiformis.—In Mr. Stainton's ‘Annual’ for 1856, page 29, Mr. E. Brown, of Burton-on-Trent, has “had a specimen in his collection for several years, from Lancashire:” a little more information is necessary: will Mr. Brown be kind enough to publish in the ‘Zoologist’ from whom he received the specimen, and particulars of capture? The only species that have occurred in this part for many years are *T. sphegiformis*, *T. culiciformis* and *T. tipuliformis*.—*R. S. Edleston; Manchester, December 20, 1855.*

Occurrence of Luperina abjecta in Flintshire.—I, last summer, took a specimen of *Luperina abjecta*, near Holywell, in Flintshire, by treacleing the trees. As I am only a beginner, I should not have ventured to pronounce it to be a rare species, had not Mr. T. F. Brockholes, of Birkenhead, been kind enough to examine it, and assured me that it was so.—*Alfred Walker; Chester, January 21, 1856.*

Capture of Lepidoptera near Horsham.—I beg to inform you that I have captured since 1850, — *Glæa rubiginea*, two specimens, one on ivy, and one at sugar; *Xylinia petrificata*, six specimens, one on ivy, the rest at sugar; *Xylinia semibrunnea*, two specimens at sugar: they were taken between October 19th and November 6th. Rusper is on the border of Sussex, about eleven miles south of Mickleham, where these insects were taken by Mr. Walton.—*H. I. Gore; Rusper Rectory, Horsham, Sussex, November 24, 1855.*

The Larva of Carpocapsa pomonana feeding on the Fig.—That *Carpocapsa pomonana* feeds on the fig may not be generally known: allow me to state the fact. A larva of this species, which I took out of foreign figs covered itself with a white web on the 19th of December, 1854, and the perfect insect appeared in April last. There was a fire in the room in which I kept it, which would hasten its appearance to some extent.—*Thomas Chapman; Glasgow, December 19, 1855.*

Observations on Micro-Lepidoptera.—Having lately received from Mr. T. Wilkinson, of Scarborough, a letter, in which there are several items of valuable information, I send you the following extracts for publication:—

Exapate gelatella. The larva feeding between united leaves of willow, in July, 1850, near Bristol: the moth flies freely from ten to twelve o'clock on fine sunny mornings.

Röslerstammia Erxlebella. Found in plenty at Leigh Wood, near Bristol, on the leaves of lime-trees;* frequently *in copulâ* on the leaves; also found on the wing on fine sunny mornings the last week in May and beginning of June. Mr. Wilkinson inclines to think there is a second brood towards the end of August and beginning of September, but not nearly so numerous.

Bucculatrix hippocastanella. This occurred in plenty, frequenting the same trees.

Œgoconia quadripunctella. Four fine specimens taken on the 31st of July, 1851, in Clifton, on an old wall much covered with moss.

Laverna ochraceella. The larva begins to mine from the root of the *Epilobium hirsutum* in the spring, as soon as the plant begins to shoot: Mr. Wilkinson found the larvæ, *then very young*, the second week in May last, sometimes as many as four on one stem: the larva never by any chance quits the stem till about to change to the pupa. This habit of the larva is a real discovery, for we Londoners had always failed to find where the larvæ came from, though the fact of the perfect insects always going greasy led us to conclude that the larvæ must be *internal feeders*.

Chrysoclista Schrankella. The larvæ in great plenty at Scarborough on the leaves of the same plant.—*H. T. Stainton; Mountsfield, Lewisham, January 21, 1856.*

Occurrence of Tinea imella at Stockton.—On the 6th of July last, whilst enjoying my pipe in the evening, at the back of the garden-wall of my house, a single specimen of this insect was started from the wall, which I had the good fortune to secure. It is a female, and in fine condition.—*John Scott; South Stockton, Stockton-on-Tees, January 1, 1856.*

* This would appear to confirm the account given by the late Madame Lienig, that "the larva feeds on limes in May and September, on the under side of the leaves, in which it eats large round holes."—*Isis, 1846.*

Capture of Tinea pallescentella at Stockton.—In a neighbour's house, where I was sitting in the beginning of September last, with the gas lighted and the window a little raised, an example of this hitherto scarce species came flying in, and rested on the back of a chair. I boxed it safely, and it now stands in my collection: it is a little worn.—*Id.*

Occurrence of Nemophora pilella at Stockton.—In the beginning of May, last year, I beat this insect out of a thorn-hedge, and again in June one or two others fell to my lot. I may add that I have not seen any specimens so dark as those taken by me. No doubt it only requires looking for by others to make them as fortunate as myself.—*Id.*

Note on Antherophagus nigricornis and Bombus sylvarum.—Mr. Smith, in his admirable work on British bees, records the finding of *Antherophagus glaber* in the nest of *Bombus Derhamellus*. This season I met with an instance of the manner in which such insects may be transported thither. When hunting Bombi, in September last, two peculiar motions of a neuter of *B. sylvarum* attracted my attention: it was clinging to a thistle-head, and wriggling and twisting its legs about in all directions. On getting hold of it I found that a large specimen of *Antherophagus nigricornis* had seized the tarsus of a hind leg between its jaws, and was holding on like grim Death. I put both into my bottle, and the *Antherophagus* retained its hold until both were killed by the fumes of the laurel.—*Thomas John Bold; Angas' Court, Bigg Market, Newcastle-on-Tyne, December 27, 1855.*

Occurrence of Agabus pulchellus in Scotland.—I am indebted to Mr. Wailes, of Newcastle, for a specimen of the *Colymbetes pulchellus* of Heer, captured by Mr. Wailes, in company with others of the same species, in Loch Achray, and on the north shore of Loch Katrine, in September, 1853. After giving this insect a most careful examination, although having no doubt that Mr. Wailes has correctly named it as the *C. pulchellus* of Heer, I still feel hesitation in considering it distinct as a species, since it seems to me to differ chiefly from the too familiar *A. maculatus* in the colour of the elytra, which are uniformly dark and immaculate. In answer to this suggestion, Mr. Wailes writes, “The facies of the insect is very different from that of *C. maculatus*; it is much more elongate and smoother, and Heer draws the distinction very accurately: it is not mentioned by Aubé, whose work is anterior to Heer's.” Seeing my opinion opposed to that of such very careful and acute observers as Heer and Mr. Wailes, I willingly withdraw it, too delighted to add another species to my series of *Colymbetes*.—*Edward Newman.*

Query as to the Eggs of Agabus.—Can any of your readers tell me where the eggs of the Agabi are deposited, or if any of the species have been noticed with them adhering to the legs or to the body as in *Hydrous piceus*? My reasons for asking these questions are as follows. In taking the species which I named *dispar*, I observed that many of the females had attached to the hairs on the under side of the anterior and intermediate femora (generally to the latter), bundles of a white granular matter, which an examination with my pocket glass led me to believe were eggs. This I was unable satisfactorily to determine, for not reaching home until long after nightfall, they had to be set aside until next morning when I found that the crawling of the insects over each other and upon the damp paper in the bottle, had so much altered their appearance that I did not submit them to microscopic examination. In thinking the matter over since, I am much inclined to believe that these bundles *must* have been eggs: had it been a substance on which the species had been feeding, the

males would have been in the same plight as their partners: such, however, was not the case, whilst fully two-thirds of the females were so burdened.—*Thomas John Bold; Angas' Court, Bigg Market, Newcastle-on-Tyne, December 27, 1855.*

Capture of Agabus dispar.—I have this season had the pleasure of taking a fine series of *Agabus dispar* (or, as our leading Coleopterists say, *uliginosus*), the first time since 1848, although I have oft carefully searched the locality. This uncertainty of occurrence and peculiarity of habit is a case in point of the necessity for close and continued search, even of the same places, year by year, if we would add novelties to our insect fauna. Even the commonest species of *Hydradephaga* will swarm for one season, then disappear and their places frequently be filled by others. By taking advantage of this, and working the ground thoroughly, more substantial progress will be made than by collecting at great distances, when the most of our time is sacrificed in travelling. But to return to *A. dispar*: immediately after the heavy July rains, thinking the time favourable, I went to Boldon Flats, Durham, for the express purpose of seeking this and one or two other rarities. I found the country flooded; in many places only the tops of the ridges above water. Commencing in the most "likely" places, those whence I took it in 1848, I worked all the forenoon, and hard too, but without producing anything better than *femoralis*. Disappointed and tired, I sought the shade of a hedge (for the sun was scorching hot), had some lunch, rested a little, and then set too and tried the "unlikely" places; one of these, the recently flooded furrows of a grass-field, produced what I sought. These "diggings," however, required hard work to make them productive; I had to dredge them over and over again, and the more I puddled the water the greater was my success. In addition to *A. dispar*, the locality furnished me with examples of *Hydroporus rufifrons*, *Duft.*, *H. vittula*, *Erich.*, and *H. nigrita*, *Fab.* When amongst the *débris* in the net, *A. dispar* simulates death with a good deal of perseverance, and it is quite necessary to allow time for careful examination before it be emptied.—*Id.*

Capture of and Localities for Hydroporus latus, Steph.—This insect is apparently one of our rarest and most local species. As this may arise from the peculiarity of its habit, I think that a notice of such, with localities, will probably lead to its being found elsewhere. The first time that I found it was in the Ouseburn, Northumberland, in July, eight or ten years ago, when I took a couple of specimens; here it was amongst shelving rocks: this locality I have dredged every year since, but without success. I next found a single specimen in the river Derwent (Durham), amongst gravel, in April, 1854. During the past season (1855) I sought for it with considerable assiduity, and found it in two widely different localities: the first was in an open drain on a Cumberland common, near Lannercost, and locally known as "Mrs. Bell's Common." Here, however, they were few and far between; a whole day's hard working (under a burning sun and tormented by "clegs," in hundreds) producing twenty-two specimens, of which several were imperfect: this was in the first week in July. In September I visited one of the wildest of our wild mountain streams, the "Devil's Water" (Durham), which, rising on extensive moors, runs a furious course over a rocky bed, and empties itself into the Tyne between Hexham and Corbridge. Here I again found *H. latus*, and in what I believe will prove to be its natural habitat, viz., amongst the large stones of a rapid running river: for although I found the greater number of specimens in the stream near Lannercost, still I think that they must have come there from the river King, which is a stream of the same nature as the Devil's Water, and to which the drain runs: this I hope more

particularly to test another season. On being disturbed, *H. latus* imminediately crawls down amongst the stones, not rising in the water as *H. Davisii*, *H. septentrionalis*, and others invariably do: hence an ordinary net is of no use whatever, as it will not go in amongst the stones, and dredging them up is quite impossible. The dozen that I caught were taken by hand, an uncomfortable and very slow process. Another season I must manufacture a net for the especial benefit of this broad-backed fellow, whose powerful frame and robust legs are so well adapted for clinging to the stones of a mountain torrent.—*Id.*

Synonymic List of the British Species of Philhydrida, with Notices of Localities, &c. By the REV. HAMLET CLARK, M.A.

IN a complete systematic arrangement of Coleoptera, the group of water-beetles, Philhydrida of Stephens, are evidently more closely allied to the Lamellicornes than to the Hydrocantharidæ; they occupy the same place with regard to the former that the Hydrocantharidæ do with reference to the Geodephaga; they are subfamilies of two distinct families: this is abundantly evident from their structure and habits, and this position has been assigned to them by our principal writers. Practically, however, to a field naturalist the two groups are inseparable; no one can pay any attention to one without constantly meeting with species of the other: in the examination of pools and ditches *Hydrobii* and *Berosi* are found in the same net with *Hydropori*; while in streams *Elmidæ* and *Hydrænæ* occur with *Hydroporus rivalis*, *H. latus* and *H. septentrionalis*. I propose, therefore, as an addendum to my previous paper on Hydrocantharidæ, to point out, so far as I am able, the British species of Philhydrida; noticing, when necessary, their localities, or any peculiarities of structure or nomenclature.

A few hints as to the best modes of collecting these insects may be of interest to the younger readers of the 'Zoologist.' Hydrocantharidæ are water *rovers*; they affect certainly the shelter of aquatic plants, but love to wander from end to end of their pool or ditch; the Rypophaga, on the contrary, are more stationary: some of them, as *Helephorus*, *Hydrochus*, *Philhydrus*, are found on the leaves and stems of water-plants; *Heterocerus*, *Parnus*, *Georyssus*, *Octhebius* and, I believe, *Sperchæus*, live in or on the surface of mud; *Elmis*, *Hydræna* and *Limnebius* are found in greatest abundance in mossy rivulets;

Cercyon and *Sphaeridium* (with few exceptions) in decaying vegetable substances.

Heteroceri are found in profusion on the muddy banks of pools or rivers, by digging them out of their burrows just below the surface; *Parnus* abound at the roots of grass in almost every wet muddy locality: *Georyssus* was taken some years ago by Mr. Waterhouse at Southend, on wet banks of a little stream trickling down the cliffs to the west of the town; the insect covers itself with a coating of mud, in which it appears to live, and which adheres to it after death; it was taken plentifully in 1835, running about, as atoms of wet clay, on the margins of the stream; *Octhebius* also is found on mud, but below the surface of the water: the collector should provide himself with a stick or stout branch with which he may thoroughly stir up and disturb the whole of the mud at the bottom of the water; by this means the insects lose their hold and float up to the surface in great numbers: they are then readily secured by the water-net.

The moss-loving groups of *Elmis* and *Hydræna* require quite a different mode of operation; they have been met with in the utmost profusion by the Rev. W. Hey in Yorkshire; Dr. Power in Northumberland; and myself in several localities in North Wales. In searching for them the entomologist will look out for mossy stones, which abound in and at the sides of the channel of mountain streams; for, though the stream itself will often supply occasional examples, these mossy stones are their metropolis. If the stream flows over the stone to be examined, let the net be placed on the lee side, so that when the moss is disturbed all the contents may be carried by the stream at once into it; then, by raking up the moss with the fingers, all its inhabitants are of course secured. If the moss is dry, or only partially under water, either the stream must be made to flow over it, or it may be torn off and washed in the net.

In this group, more perhaps than in any other, neatness and care in setting out the insects for the cabinet is requisite: I attach the greatest importance to this point: a single example of an insect well displayed on card is more valuable than twenty imperfectly mounted. I am satisfied, from a careful consideration of Mr. Stephens' cabinet, and from a comparison of its state with the species which he has sought to establish out of its contents, that not a few of the errors into which we have fallen in nomenclature are owing simply to the little time and care allotted to mounting examples. The naturalist who has captured but little during the season, but who has not spared pains in preparing that little as perfectly as possible, so that the insects on his card repre-

sent, as closely as he is able to make them, the characters, positions and habits of the insects as he saw them alive—that naturalist has probably done more towards clearing up some of our difficulties than another who may have been, in the field, infinitely more successful, but who has lacked the leisure faithfully to represent nature in his cabinet.

Of the different modes of setting out these insects,—gumming on points of wedges of card, as was formerly adopted; setting out on talc, or pinning with iron wire, as obtains on the Continent; or mounting the specimens on a flat surface of card,—the last is *facile princeps*, pre-eminently the best. Insects fastened on the points of cards are never safe; by the least spring of the pin in moving them from the cabinet they are probably lost for ever; and no one who has experienced the difficulty of handling specimens mounted after the foreign method can, I think, prefer that; but well-carded specimens, with tolerably stout pins, are free from all these objections; if dusty, they may be brushed with a camel-hair pencil: if required to be placed under the microscope, they are most readily adjusted; should they become loose from the cork of the travelling box, they are well protected from injury; and, which is of the greatest moment, they best represent the insect in its living state.

The “effects of isolation” and of peculiarity of locality are nowhere more marked, and nowhere more important to be carefully noticed, than among the Rypophaga, though to what extent these manifest results are to be allowed to affect species is a question which presents itself in every department of nature as one of great interest. I do not propose to enter upon this subject now, but notice it as suggesting the great importance of registering carefully the date and locality of each capture: to know certainly that an insect was taken at such a date, from moorland, from mountain, or from fen, is not merely knowledge that makes the collection of greater interest, but the only process by which we can hope to assign to each of the many varieties of this group its proper position and typical specific representative.

As to the nomenclature of the species, no two authorities and no two cabinets agree; the subject has received comparatively little attention, and hence there is no ground for surprise at meeting with difficulties: these difficulties may perhaps be an excuse for me, should any error be discovered in the synonymy proposed; but that they have not been insurmountable is owing to the great and valued assistance which I have received from Dr. Power and Mr. Waterhouse. I do not say that these excellent entomologists have endorsed every name, as

that would make them responsible for errors for which I alone am accountable ; but that they have, in several instances, in which, without them, I should have arrived at doubtful and unsatisfactory conclusions, either confirmed my opinion by their own, or given opportunity for a reconsideration of the point in question.

To Dr. Gray and the gentlemen of the Entomological Department in the British Museum I am also under obligations, for the courtesy with which they have allowed me free access to the historically valuable collection of the late Mr. Stephens, now under their charge.

HAMLET CLARK.

Northampton, February 13, 1856.

Humming in the Air.—White, in his 'Selborne,' writes of not being able to account for the "humming in the air"; Captain Chawner told me that since White's time the country people had found out what occasioned it, and the Captain and I tried the experiment by throwing a stone up in the air, when the humming was observed, and the stone, in its descent, was accompanied by a specimen of *Helophilus*. I recollect, at school, we used to throw up a piece of white or brown shard to attract a white or brown butterfly, and down would come the butterfly in the same manner.—*J. C. Dale; Glanville's Wootton, January 12, 1856.*

Excrescences on the Leaves of Willows.—Last autumn I noticed at Norwood, Sydenham and Forest Hill, the leaves of the young willow-trees to be covered with a curious brown excrescence, which, at a little distance, had quite the ornamental effect of a blossom. Will you oblige me, any time at your leisure, with the name of the insect that caused this appearance?—*William Atkinson; January, 12, 1856.*

[Please to send some when again met with, and I will try to explain them : a very common excrescence is caused by *Euura Gallæ.*—*Edward Newman*].

Wasp in January.—A wasp in January is rather a rare occurrence ; one, however, visited a member of this household the night before last while in bed, and stung him three times before it was secured. I think this worth noticing, as last summer their scarcity was the subject of general remark.—*George Guyon; Ventnor, Isle of Wight, January 21, 1856.*

Note on the British Museum Lists of British Insects.—I observe that *Forficula decipiens* is omitted : I presented specimens of this insect to the British Museum Cabinet: is it possible it can be only a variety? and if a variety, of which species? Again, *Forficula forcipata* I find on the coast, while *borealis*, although very similar, I take here by beating the hedges, and never in company with *F. auricularia*, which comes in plenty to sugar when placed as a bait for moths. I also see that *Panorpa germanica* of *Curtis* is not considered distinct from *P. communis*; I never take them together.—*J. C. Dale; Glanville's Wootton, January 12, 1856.*

Effects of Light and Heat on Actiniæ.—In the last number of the 'Zoologist' are some remarks by Mr. Warington, on the injurious effects of exposing an aquarium too long to the heat of the sun. In July, 1854, I lost some *Actiniæ* (sea-anemones), which I had conveyed to Richmond and kept about three weeks, by leaving the bottle incautiously on the window-sill exposed to the sun for two or three hours. Some fresh-water animals in another bottle similarly placed shared the same fate, save one little *Hydroporus pictus*, which, thanks to a good constitution, survived and continued to flourish among all the *débris* for at least three or four months, though no growing plants were afterwards introduced, obtaining sufficient oxygen probably by excursions to the surface. Screens of muslin, &c. are perfectly efficient when properly attended to; but during absence from home, when the aquarium must be left to the care of others, the inhabitants are very likely to suffer from too little sun-light or too much sun-heat. I, therefore, put forth the following suggestion, in case any one chooses to ascertain its feasibility. Since photography has become a popular science, it is pretty generally known that the three principles existing in common light,—luminosity, heat and chemical action, are to a great extent separable, and reside respectively in the yellow, red and blue rays of the spectrum. It is moreover, I believe, considered that growing plants decompose carbonic acid and liberate the oxygen under the influence of the luminous or yellow rays: if this latter opinion is correct, would not the interposition of a screen of yellow glass, while giving free admittance to the purifying influence, effectually prevent the water from getting over-heated, by arresting the progress of the red or heat-giving rays?—*George Guyon; Ventnor, Isle of Wight, January 21, 1856.*

Entomological Botany (with more especial reference to the Plants frequented by the Tineina). By H. T. STAINTON, Esq.

(Continued from page 4894).

Poterium Sanguisorba. Lesser Burnet.

This appears to be the special food of the pale yellowish larva of *Peronea aspersana*, but I am not aware that it is so of any other Lepidopterous larva.

Agrimonia Eupatoria. Common Agrimony.

A common plant on banks or the dry borders of fields, pushing up a long stem as it goes to seed. By the bye, the seeds of respectable size and hardness ought to be the pabulum of something. The leaves are frequently mined by the larvæ of *Nepticula aurella*.

Alchemilla vulgaris. Common Lady's Mantle.

Cited by Speyer as the food-plant of *Zerene Alchemillata*.

Potentilla anserina. Silver-weed.

This plant is too common to be passed over in silence, but, though I have often looked on it I never yet found a Lepidopterous larva either at breakfast or dinner.

Potentilla reptans. Common Creeping Cinquefoil.*Potentilla tormentilla.* Common Tormentil.

Both common plants; the latter apparently ubiquitous, growing freely on sand-hills by the sea-side and on the summits of Scotch mountains. No Lepidopterous larva has been observed on either.

Potentilla Fragariastrum. Barren Strawberry.

The small white flowers peeping out from amongst the silky leaves are among the harbingers of spring; it delights to grow on shady banks and by the side of path-ways in woods. In the month of September the leaves will be found mined in contorted, slender tracks, by the larva of an unknown Nepticula, which Professor Frey hopes to breed in the spring (see 'Entomologist's Annual,' 1856, p. 62, Enigma No. 5). I have no doubt that the larva of *Lampronia prælatella* eats the leaves of this plant with as much satisfaction as those of *Fragaria vesca*.

Comarum palustre. Marsh Cinquefoil.

Speyer quotes as feeding on this, *Tortrix spectrana*, but I am not aware of any plant growing in moist places that that larva will *not* eat.

As this plant is most at home in peaty bogs, where queer insects may be expected to turn up, it should be scrutinized closely by those who may happen to meet with it.

Fragaria vesca. Wood Strawberry.

Speyer enumerates the following as feeding on this plant:—*Polyommatus Alexis*, *Thymele Alveolus*, *Saturnia Carpini*, *Callimorpha dominula*, *Tæniocampa I-cinctum*, *Phlogophora scita*, *Hyppa rectilinea* and *Lampronia prælatella*: the two species whose names are here given in Italics have not yet been found in this country; *P. scita*, it must be borne in mind, has some resemblance to *Meticulosa*, and is a species far more likely to be found here than *Empyrea*; *I-cinctum*, allied to our common *Gothica*, is a more southern species, though it has been found in the neighbourhood of Paris.

Lampronia prælatella is one of the most interesting feeders on this plant; none can see, for the first time, the habit of the larva, without a feeling of astonishment at the endless diversity of instinct in these little creatures. The larva constructs a flattened case, not exactly in the form of the figure 8, because not so attenuated in the middle, but very like a fiddle without a handle: in this case it creeps about sluggishly on the leaves of the plant, and when it finds a piece to its taste, instead of eating it *in situ*, it cuts off a large piece and walks away with it; it then attaches its case to the under side of the leaf, and pulls the loose piece of leaf alongside of it, so that the larva and case become completely concealed between the growing leaf and the piece it has cut off for its own private eating; perhaps as the piece thus taken in for store becomes a little withered before it is all eaten, this caterpillar may belong to that class of epicures who like their food a little *high*. When, during cold weather, their appetites are not so great, they content themselves with slowly nibbling the edges of the leaf, without laying in a private hoard. Whether *Lampronia Luzella* feeds in any similar way is to us at present a mystery, nor have we any clew to its food-plant.

The wood strawberry is mined by a *Nepticula*, I believe *Aurella*, and also by a Dipterous larva.

Rubus Idæus. Raspberry.

Though best known as a denizen of our gardens, "the wild raspberry grows plentifully in mountainous woods and thickets, especially in the North," and it is in its native haunts that it ought to be most closely examined by the energetic collectors of the North.

Speyer cites as feeding on the raspberry, *Argynnis Daphne*, *A. Paphia*, *Trochilium Hylæiforme*, *Saturnia Carpini*, *Callimorpha Hera*, *Cerastis Vaccinii*, *Scopelosoma satellitia*, *Calocampa vetusta*, *C. exoleta*, *Zerene albicillata*, *Polypogon tarsicrinialis*, *P. barbalis*, *Scopula prunalis*, *Sericoris Urticana*, and *Notocelia Udmanniana*: those species, the names of which are printed in Italics, are not yet reputed British; though I am aware that *C. Hera* has recently been taken at Newhaven, and has lodged a claim for admission to our lists, which claim will probably come on for hearing at the next meeting of the Entomological Society. Of *Trochilium Hylæiforme* the larva feeds in the roots of *Rubus Idæus* in winter and spring, and, as the species is extremely probable to occur here, this suggestion may be of use.

Among the *Tineina* larvæ feeding on this plant one of the most important is *Lampronia Rubiella*; the natural history of this species was

published, as far back as 1781, by Bjerkander, in the 'Acta Holmiæ,' p. 20: the following translation of his notice will probably not be uninteresting to many of my readers:—"On the 9th of May, 1780, as the raspberry-bushes were beginning to put forth their leaves, I noticed some red maggots, which had eaten through the buds into the stems; on the 30th of the month they had spun silken cocoons, and on the 23rd of June, when the raspberry-bushes began to bloom, the moths made their appearance. On the 4th of August, when the raspberries were ripening, we observed the same sort of caterpillars (then one line long) seeking their food on the receptacles, and we continued to see them until the end of the month; probably they go down to the ground, and live through the winter without feeding, but in the spring they seek their proper nourishment. Since from four to eight of these wretches were on one stem, and injured (if they did not quite consume) the buds which would have produced leaves and flowers, we can perceive why, in some years, the delicious raspberries are less abundant."

The next raspberry-feeder I have to mention has not yet been found here, though it certainly will be before long; the moth is a spotless gray *Hyponomeuta*, with a ferruginous head; it is the *Stannella* of Thunberg: this species has not yet been bred, but a gregarious *Hyponomeuta* larva has been found in Silesia on the *Rubus Idæus*, which is *suspected* to belong to this species.

H. T. STAINTON.

Mountsfield, Lewisham,
December, 1855.

Proceedings of Natural-History Collectors in Foreign Countries.

MR. H. W. BATES.*—"Villa Nova, Province of the Amazons, September 12th, 1854.—I had prepared all arrangements in April for ascending the upper river, having ascertained at length the arrangement of the steamer from Ega. Villa Nova is a peculiar locality: in December, 1849, in two or three days I was astonished at the number of new things I met with, but at present I have been disappointed; the ground which I hunted then is as yet under water, and I suppose the right season for the locality is from November to about February. Of Erycinidæ, at present, I have seen scarcely any; Nymphalidæ are more abundant, at present, however, few new (one new *Timetes*, one new *Agrias* (?), one new *Heterochroa*, one *Pyrrhogyra*, &c.); Morphos,

* Communicated by Mr. S. Stevens.

five or six pieces, two of which fly so high and rapidly that I cannot get at them; one of them is either Adonis or Cytheris, the other I do not know. In Coleoptera and Hemiptera I have got a fair amount of new species, but still this is nothing compared to what I ought to be doing higher up. I send a box of my private collection of those families which I cannot keep any longer, on account of mould: the Staphylinidæ have all been twice cleaned with spirit, and I am afraid they will become spoilt if I keep them any longer. I must explain a little the remarks made on butterflies to Mr. Hewitson; the sexes figured as different species are *Limnas Vitula* and *L. Thyatira*; I think I ticketed them male and female, but if not, of course Mr. Hewitson, and no one else, could divine that these were the same species of insect; besides this, I rather think the female of *Catagramma Peristera*, is not the true one,—“species placed in wrong genera.” I made this remark because I thought strongly there was much incongruity in his plate of *Lemonias*. *Lemonias* is identical in neuration, palpi, legs, &c. with *Nymphidium*; but it is a good genus, and offers a distinct character in its habits from *Nymphidium*, the species reposing always with the wings closed, whilst all the *Nymphidiums* repose with wings open; I sent in December last the females of two species of *Lemonias*, which are very different from the males, whilst in *Nymphidium* the females are similar to the males. Now, Mr. Hewitson’s *Lemonias Senta* and *L. Rhodope* have none of these characters of the *Lemonias*; I think they are *Nymphidiums*, and their introduction into *Lemonias* destroys the harmony of both the genera.

“The Mundurucús, and, I think, the Manhés also, in their natural state, shave the head, except the front, where they leave a fringe of long hair: when they leave their villages to come with the traders to the civilized places, they let it grow in the usual way. Now, if the hair is wanted to glue to a model, it ought to be in the style of the savages; if only for physiological examination, the hair of any Indian born in the villages will do.* The tribe Pauxés are long ago extinct: the Purús (called Purupurús at Ega) inhabit away up the river Purús; the Mundurucús inhabit the right bank of the river Tapajos; the Manhés the left bank of the same, as well as the rivers behind Villa Nova; the domesticated Indians in Villa Nova are nearly all Manhés, Mundurucús or Muras. I made a short (very short) vocabulary of Manhés and Mundurucús on Rio Tapajos; I could not find a single word the same in the two languages.

* This is in reference to a request to procure the hair of the native Indians for Dr. Latham.

"I have looked for the fresh-water sponge here without success at present; when waters sink it is found on branches of trees in Ygapós, &c. There is no want of Ygapós here,—many miles of gloomy hollows in the forest: it will be curious if the sponge is only found in *black waters*, the Tapajos being black, whilst the Amazons and creeks here are white; in the same way I cannot find here either orchids or ferns (except two very small species).

"I am very sorry to hear of the damage done to my collection at the Custom-house; that was the best box, and, in fact, I think, the very best box of butterflies I have ever sent: no one knows the days and weeks of patient search that collection cost me; those beautiful little Erycinidæ were so very rare, and Alta do Chao was the only place in which I had seen many of the species; I am sure many of the grand Diurnes, now so highly prized, will become common in collections long before these Erycinidæ."

"Villa Nova, December 15th, 1854.

"I now send you the result of three months' further labour at this place. Upon the whole I consider it a poor locality; which I attribute to the want of creeks of running water and moist places in the forest. The last collection I sent was on the 12th of September, which I hope arrived safe. There is nothing particular, I think, to call your attention to in the present collection: I hope the fine Agrias is new to you, as it is to me; there is also a new Eueïdes and some beautiful Hesperiæ. With regard to the various orders for other things I have from different friends, I can do scarcely anything at present. For Dr. Latham I have done nothing (because impossible here), except getting the exact colour of some few Indians; I cannot get the hair here, as the few Manhés in domestic service here are kept so close cropped. In feathered dresses, weapons (except bows), height, proportions, &c. of a number of full-grown individuals, I cannot do anything without making a special voyage to the villages of the pure blood Indians, which would take me two months. I have a number of notes on the subject of Indians, in which I make out that the whole mass of nations is strongly marked into two distinct classes, &c.; this, by-and-bye, I will communicate to Dr. Latham, if it be interesting to him, but first I should like to see what Mr. Wallace's observations are on the same subject.

"In economic Botany I have only two subjects collected here, not worth sending by themselves, one of them is the Piao (Pinhao, *Lind.*

Veg. Kingd.); the other is a beautiful silky fibre of a species of Malvaceæ, which I think might be made a branch of commerce.

“There is no doubt whatever that the country from Ega to Moyobamba is the richest country in America, in beauty and variety of all departments of Natural History, and the least known, because difficult of access, and beset with the greatest difficulties (as scarcity of food, poverty and savageness of the Indians, and incessant plague of mosquitos, &c.) To-day a French gentleman passed this village on the road from Moyobamba to Pará; he is an amateur geographer (M. Emile Carrey); he brought a few hundreds of Nymphalidæ (in papers), collected in four or five excursions, around Moyobamba: he tells me that the residents there said they never had an entomologist there. Imagine the treat I had to examine the whole of the specimens; they showed me that Moyobamba is indeed a totally new place with respect to Nymphalidæ: there were some fifteen species of Catagramma alone. M. Carrey was surprised to be shown the difference in the species; he thought they were all the same! This fact, together with another, namely, that he could not find any insects at Ega, shows what I could do by a little close investigation. Besides the Catagramma, I noted two *Papilio Zagreus* and a new *Megastanis*(?), in all about twenty-five species of the loveliest Nymphalidæ, new to me: three-fourths of the collection of course were common *Callidryas*, *Agraulis*, &c.”

“April 30th, 1855.

“The small collection now sent contains a few very choice things I believe. In Coleoptera, there are two species of *Ctenostoma* and a new *Megacephala* (very similar to *M. curta*, *Reiche*, but smaller, more parallel in shape, &c., and found in company with *Spixii*, at Villa Nova, in the earth: *M. curta* is found under stones close to water, and is common at Santarem, where the new species does not exist): there are many species of Coleoptera which I never sent before. In Lepidoptera, there is a new *Eueides*; the two or three *Catagrammæ* and one or two others please note as Moyobamba insects, from a few given me by M. Emile Carrey. There are about twenty specimens of the new insect *Gnostus formicicola*, *Westw.*: it is found, strange enough, only in one little corner on the edge of the woods, in the galleries only of one small species of ant. Since Sunday last I have examined every hollow twig and branch in the neighbourhood and got only twenty-two specimens; four I keep with me, I send you nineteen, including one old specimen I had kept over from last year. The same dry twigs contain quite as many habitations of other ants,

as *Cryptocerus cordatus*, *Smith.*; but the *Gnostus* is found only in company with the one species of small *Myrmica*. In opening one twig, I observed a *Myrmica* carrying one of the *Gnostus* in its mandibles. I examined frequently dry twigs, &c. in Villa Nova, for ants and their parasites, but found none; in fact, it is difficult to devote oneself sufficiently closely to minute things, when large, conspicuous insects turn up daily, such as was the case at Villa Nova; I worked there daily about five months before finding a *Ctenostoma*; about a fortnight before I came away I began to get one nearly every day: such is Entomology! One clear year should be devoted to every locality on the larger insects alone, a second year to the minute ones, and two or three years to birds, plants and shells.

“ You will be sorry to hear I have returned to Santarem; I had no alternative, my health got very low in Villa Nova from bad food. I have now the pleasure of saying that I never felt better, more disposed to work, or happier since I have been in the country. I can assure you with certainty now (D.V.) that I am off to the Upper Amazons; I shall have to get to the Barra in time for the three-monthly *Nanta* steamer, *i. e.* the 15th of June. Mr. Spruce, I hear, went last voyage, the 15th of March. I shall make *Ega* head quarters, have a cottage there with a small canoe and a couple of hands, and thus visit all the other places up to *Nanta*, inclusive. I shall attend to all departments of Natural History, making insects the chief: I take up an immense lot of boxes, &c., all ready; have bought two new guns, &c. The last two months I have worked hard at birds; I never have taken any pains with them before; now, they tell me I put them up very nicely. Since I began to notice birds here, I have been surprised to see how many species of humming birds there are, even at Santarem; I have shot six very distinct species, and have seen, I am sure, four others.”

“ *Ega*, Upper Amazons, August 16, 1855.*

“ My last letter was from Santarem, I believe, after I had received your parcel of ‘ *Athenæums*,’ &c. I now write from *Ega*, 900 miles further up the river, and I suppose you will like to have some account of my voyage. In 1849-50 it took me ninety-seven days travelling from *Obydos* to *Ega*; this year I accomplished the journey from Santarem to this place in eight days! (fourteen days including six of delay at Barra), thanks to the *Rio Janeiro* Government, who pay a steam-boat company an enormous sum to run steamers in a country where the

* Communicated by Mr. F. Bates.

traffic, I should think, scarcely pays for coal and grease. I was fortunate in my voyage, performing it just in the 'nick' of time to escape two very grave inconveniences: one was the cholera, which broke out at Pará, and the next steamer after my voyage suffered horribly; eleven men died in the eight days' journey from Pará to Barra: the other inconvenience was the Upper Amazon steamer, which, a few days after depositing me at Ega, got aground on a sand-bank, the river sinking at the time, so that she remained high and dry for about five weeks, the passengers having to descend in an open boat to Barra. I am sincerely thankful for my good fortune in landing in health and safety, with all my baggage perfectly sound, and in being able to begin my rambles in these glorious forests two days afterwards.

"I arrived on the 19th of June, so that I have been here about two months, and have collected 2600 chosen insects, besides a few land-shells, &c. There is a wonderful difference in the general run of species between this place and Santarem; in fact, with the exception of a very few, common everywhere, the whole insect Fauna is changed: the soil is different, the forests are composed of quite a different class of trees, but there is no place on the Lower Amazons that can at all be compared with Ega, in its exuberant fertility,—rich, fat, black soil,—teeming waters, and hence towering forests. When I arrived the river had just begun to ebb; in a week or two there was sufficient sandy beach exposed for the *Megacephalæ* to come out, so I commenced my labours in that department: the first thing I found was *M. curta*, *Reiche*, very few; then one or two of a smaller species nearly allied to it; these both disappeared when the sandy beach was further exposed, and I began to take the very curious *M. quadricollis*, *Laporte*; soon afterwards appeared *M. Klugii*, and, in company with it, *M. bifasciata*, *Brulle*, and *M. laminata*, *Perty*? I find that the Ega *M. bifasciata* is the true one, according to Westwood's description, and the allied species common at Santarem is a distinct species, perhaps *M. cruciata*, *Brulle*; examine them for yourself: you will find the Ega species, besides differing in size and colour, has a capital character in the sutural apices of the elytra, which are divergent and produced, whilst in the Santarem species they form simple right angles; this is a character Westwood has overlooked. I have made another observation very similar: there are two species confounded under *M. laminata*; the one I took at Santarem is larger, darker and much more pubescent and punctured on disk of thorax than the one I take here (Ega). I do not expect to find any new *Megacephalæ* here; but shortly I shall take a trip further up, and hope to find several."

"September 1.—After many delays the schooner, I hear, starts on the 5th. We have had a long run of heavy, wet and squally weather; the dry season is two months backward, and the Lepidoptera have not appeared so abundantly as they should have done. We have had a dull time of it; the steamer only comes once in three months, no sailing vessels have arrived, and we have no bread, hard or soft, or butter, or any European luxuries. I have gone on, however, quietly, as usual: up early, a walk, bath and breakfast; then out with my boxes, selecting the new species and stowing away duplicates, until 9.30 A.M., when the sun is out hot, and it is time to be off to the forest. I have scarcely missed a day, except Sundays, and never return without bringing a species new to me; general average, four or five a-day new. Yesterday I got two new Lamellicorns (one *Anomala*, one *Isonychus*) and one extraordinary and large *Necydalis*, quite new. To-day got another new Longicorn. A few days ago I got a most splendid new *Prionidæ* (*i. e.* new to science), being a *Sternacanthus*, of which there was only one species known before. Of these things there scarcely ever turns up a second specimen, so that my private collection here abounds in beautiful unique specimens of new species. When you consider the great pleasure there is in this, and at the same time the liberty and independence of this kind of life,—the tolerable good living (turtle, fresh fish, game, fowls, &c.),—the suavity of the climate, &c., you will readily understand why I am disinclined to return to the slavery of English mercantile life. One great privation, however, I suffer and feel acutely—the want of frequent receipt of letters, books, newspapers and magazines. Since May last I have not received one line of letter or page of English literature!—the stirring news of war I get only through the miserable, brief notices in Brazilian newspapers.

"I am afraid I shall not be able to send you many species of Geodephaga; this country is known to be poor in that family; not one *Carabus*, and only half-a-dozen *Cicindelæ*. The English Geodephaga make a better show than the Amazonian. We are tolerably rich in *Brachinidæ*, especially *Casnonia*, *Agra*, *Lebia*, *Cordistes* and *Calleida*, but none are common. There are here, at Ega, fifteen species, perhaps, of *Agra*; but I cannot get half-a-dozen specimens of any one.

"Ega is wonderfully rich in *Erotyli*: in the woods, after a shower, you meet with great fellows, some nearly an inch long, gay in vivid red, black and yellow colours; they become dull after death. I have now about sixty species of large fine *Erotyli* and *Triplax*. Longicorns

also are of wonderful variety and beauty; I must have near 500 species now in my private boxes. In Lamellicorns many fine species turn up, but they are scarce. *Dynastes*, almost as large as one's fist (*M. Actæon*); some brilliant *Phanæi*, &c.; *Macraspis*, *Rutela*, &c. Curculiones also are endless in variety. Of course most of my time is taken up by Diurnal Lepidoptera, as most European collections are yet deficient in Ega species: in this department Ega is one of the finest districts in the world. I should like to get an enthusiastic Lepidopterist from England set down here for a morning's ramble with me—just such a morning as to-day: the *Callithea Batesii* appeared for the first time. There is a path along the beach, skirting the banks of the Lake of Ega; the land above is high and covered with forest, and the beach is a grove of Araçá trees: the limpid waters of the broad lake break gently on the sands: the trees overhead are full of gaudy coloured birds; the horned screamer (the noisiest bird in the world) yells from the forest; lonely swallows (dark blue, with a ring of white across the breast) are flitting about; but all along the beach is a succession of the most beautiful butterflies in the world. This morning I saw more species than constitute the whole English Fauna in this department; but I saw only four species of *Papilio*—generally there are more: they are ten times more nimble than in colder climates; *seeing* them is *not* getting them nice and perfect in your collecting-box, so that my supposed companion would get, very shortly, a capital appetite for his turtle-soup and steaks before the mid-day sun warned him to desist and avoid too great exhaustion."

"September 14.—In accordance with Brazilian punctuality, the schooner has not sailed, but the owner now says he goes positively to-morrow. I have made some splendid captures since last date in Coleoptera: fine new species in all families; even a *Dynastes*, new to me, two inches long. Some very fine new Longicorns: two new species of the beautiful genus *Gymnetis*, which replaces here the *Cetoniæ* of the old world.

"The steamer will be here positively on the 19th, when I hope there will be letters from you. Believe this to leave me in good health, though, to tell you frankly, I am compelled to be more careful of myself now than formerly, as my stomach is liable to get out of order, and my skin is assuming a decidedly yellow cast.

"H. W. BATES."

PROCEEDINGS OF SOCIETIES.

LINNEAN SOCIETY.

January 15, 1856.—THOMAS BELL, Esq., President, in the chair.

Exhibitions.

The Rev. C. A. Johns exhibited a drawing, together with a specimen of *Sphæria militaris*, found by him in June last, growing from the interior of a pupa, among dead leaves, in Bickleigh Vale, Devonshire.

Mr. Saunders observed that this fungus was well known, although not common: he found it last year near Stokesley, in Yorkshire, and made drawings, which he should be happy to exhibit. This species invariably grows on the pupæ of Lepidopterous insects.

A long and interesting discussion followed, in which Mr. Babington, Mr. Westwood and others took part. [There is a second species of *Sphæria* found in England growing on dead insects: Dickson was the first to notice it; he figures it on the larva of some carabideous insect, and describes it under the name of *Peziza entomorhiza*, giving the habitat *in larvis insectorum emortuis*.—*Crypt. i. 22, tab. iii. fig. 3*].

Mr. Saunders exhibited several vegetable productions, sent to him from Natal by Mr. R. W. Plant, together with a wax-like deposit, in spheroid lumps about as large as a marble, which had been gathered from a tree, and each of which contained the dermal envelope of a female Coccus.

A discussion followed, as to the properties of the wax, in which Mr. Hanbury and others took part.

Lepidosiren and Allied Genera unquestionably Fishes.

Mr. Newman read a paper intituled 'Notes on the Lepidosiren annectans,' in which he advocated Professor Owen's view, as to its ichthyic nature. He thought its affinity to the amphibious reptiles was very slight, and called attention to the fact that those metamorphotic reptiles with which it had been compared, were either in an immature and confessedly ichthyic condition, as the tadpole of the common frog; or the more mature Siren and Proteus, in which the larval condition appeared permanent: he also invited attention to the teeth, and pointed out their similarity to those of *Echiodon Drummondii*; and to the continuity of the dorsal, anal and ventral fins, a decided character of the Murænidæ, and again to the scales and lateral line; the scales were very perfect and precisely those of a fish; and no scales whatever existed in any amphibian reptile: the lateral line was moreover not only exclusively confined to fishes, but particularly characteristic of that class of vertebrates. He considered the most interesting character of the creature to be its skeleton, which Professor Owen had described as exactly intermediate between the osseous and cartilaginous types; and served to connect the Murænidæ among the former with the Petromyzontidæ among the latter.

Rectification of Statements on the Economy of a Pelopæus.

Mr. Newman read a critical notice of a paper lately printed in the 'Proceedings' of the Society, in which he pointed out several palpable errors; a wasp of the

genus *Pelopaeus* was called the "mason-bee;" the female was described as the male; and a small green parasitic *Chrysis* was described as the female. He thought it necessary for the credit of the Society that these mistakes should be pointed out by one of its own Fellows.

Diptera of the Malay Peninsula.

Mr. Saunders read some remarks prefatory to a 'Descriptive Catalogue of the Dipterous Insects, collected by Mr. Wallace in the Malay Peninsula, by Mr. Walker;' the MS. of which was laid on the table.

Election of Fellows.

Nathaniel H. Mason, Esq., J. R. Mummery, Esq. and R. J. Shuttleworth, Esq. were elected Fellows.

February 5, 1856.—THOMAS BELL, Esq., President, in the chair.

Mr. Newman read the following

Note on Atypus Sulzeri of Latreille.

"I beg to exhibit a specimen of the *Atypus Sulzeri* of Latreille, a spider not uncommon in some parts of France, and which is recorded by Dr. Leach, in the 'Supplement to the Encyclopedia Britannica' (4th Edition; Art. *Annulosa*), to have occurred in the neighbourhood of Exeter and London. Dr. Leach's statement appears to have been received with some distrust, owing to a supposed carelessness in his records of habitats, and, although many years have intervened, has never been confirmed. It is, therefore, with peculiar pleasure that I am able to establish, beyond a doubt, the claim of the species to be regarded as British, and to make some additions to our knowledge of its most interesting economy. In the first place, however, it is necessary to state that for my knowledge of the name and published history of this spider, I am indebted entirely to Mr. Meade, of Bradford, whose courtesy in rendering assistance to any student of his favorite science of Arachnology is familiar to all who have applied to him; and for the detail of its habits, as observed in the South of England during last summer, I have to thank Mr. Brown, of Cirencester, one of the most acute and skilful observers it has ever been my good fortune to meet with. Walckenaër, in his 'Histoire Naturelle des Insectes Aptères,' describes this spider under the name of *Oletera Atypa*, and thus records its economy:—'The female constructs, in rather moist places, a subterranean gallery, extending first in a horizontal direction, and then turning downwards; she spins in the interior of this gallery a very close white silken tube, which she strengthens with bits of grass and moss; and at the bottom of this, she deposits her eggs in an oval-shaped mass, enveloped in a web of white silk and fixed by threads at each end. She leaves part of the tube hanging out of the hole to protect the entrance: this external part is two or three inches long, and half an inch in diameter. The tissue of the tube is very close, fine and white, and resembles the cocoons in which some Lepidopterous pupæ are enclosed. It is of uniform diameter, and terminates below in a slightly pointed

extremity: this extremity is attached to a bundle of silky hairs interlaced with fibres of plants. Thus the bottom of the tube is protected from the humidity of the earth." — *Walckenaér, op. cit.* i. 244.

" It appears that the male of this species is much more common in France than the female; he is erratic in his habits, and hides under stones. I cannot find that he has ever been found in company with the female, or in a subterranean gallery; and I may add, as a collateral fact, that the males of our commonest spiders seem to differ considerably from the females in their mode of life; they are far less voracious, and those of the geometricians rarely construct the well-known webs. I will now cite Mr. Brown's observations on *Atypus*, in his own words: — 'When on a visit to Hastings during the past autumn, having to pass through a lane, with a high and steep sand-bank on each side partially covered with grass and bushes, I noticed, on one of the banks which had a south aspect, something hanging down which looked like the cocoon of some moth; but found, on compressing it slightly, that it was quite empty: it then occurred to me that it might be the nest of a spider; and, on examining it more closely, I found, to my surprise, that it descended into the bank, and appeared firmly attached at the distal extremity; so firmly indeed, that I could not extract the first I found without breaking it. My curiosity, however, was now thoroughly awakened, and on finding a second example, I went more cautiously to work, removed the sand carefully with a long knife, and at a depth of nine inches, I found the extremity of the structure and drew it out quite perfect. It was a long silken sac, and at the bottom was a hardish lump, which proved to be a spider. The next I tried went much deeper, indeed so deep that I failed, after much trouble, in getting it out at all. I tried many others, sometimes succeeding and sometimes failing in my attempts to get them out entire. I found them vary greatly in length, and think they may be lengthened at various periods of the spider's growth: in some of the nests there seemed very obvious indications of this lengthening: the usual length was about nine inches, but some were very much longer. Their form is tubular, commonly of a uniform diameter of three quarters of an inch, and rounded at one end in the form of a purse: they are composed of very fine silk closely woven throughout, white or whitish within, and covered exteriorly with yellowish or brownish particles of sand, which give the tube a dirty appearance exteriorly, but inside they are always neat and clean. The exterior portion of this tube visible on the bank is about two inches in length, pendant, and always inflated; it is of a darker colour than the subterranean portion of the tube, and agrees in this respect with the general surface of the bank. I took home one of these tubes in a collapsed state, or with the sides pressed together, and having the spider at the extremity: on opening the box I perceived a movement throughout the tube, as if it were undergoing the process of inflation: this soon subsided: the next morning, however, I was surprised to see the tube inflated throughout its entire length, more especially at that end which had been exposed on the bank. How can the spider effect this? In some of the tubes it is very difficult to discover any external aperture; but, in that portion which is exposed and is distended more than the rest, I sometimes discovered one or more minute openings, protected or covered by a little valve or door: in some nests these openings are not to be detected; when present, they open towards the bank. Although very loosely constructed at the lower extremity, I do not think there is an opening there, except when the spider is deepening her burrow, or I think, in some instances, the

spiders would have escaped through it when I extracted the sacs: this was never the case.

“A circumstance in connexion with one of these nests may throw some light upon the kind of food on which these interesting creatures live, or at any rate, which they occasionally meet with: on drawing out one of the sacs I observed a worm at the lower end, partially within the sac and partially outside; and that the spider had evidently been eating a considerable portion of its anterior extremity. It is not unlikely that this kind of food may frequently fall to the lot of the spider, a poor worm, in its mining progress, blindly thrusting its head into the spider's den! The spider, removed from her sac, is extremely slow, sluggish, lethargic, and apparently helpless; several which I kept in a glass remained nearly motionless at the bottom; and one which I introduced into another glass along with another species (*Epeira diadema*), was instantly attacked by the latter, and soon killed or rendered powerless, offering but little resistance, a result quite different to what I had expected from its formidable appearance.

“This spider, when full-grown, is about three-quarters of an inch in length, and of a brown colour; the forceps very strong, and furnished, along the keel, with twelve sharp triangular teeth or spines; the extremity is armed with a pointed curved claw, two and a half lines in length; there are two four-jointed palpi, three lines in length: the two mandibles are furnished with small teeth, almost concealed by a fringe of strong hairs of a reddish colour: I am not certain whether the row of spines is single or double: the first pair of legs is the longest, and they diminish in length to the last pair, which is shortest: there are four spinnerets; the longer pair have three articulations, and are situated above the other pair: the eyes appear grouped together on the anterior part of the cephalothorax, which projects in front, is shining, and destitute of hair: all the other parts of the spider are covered, but not thickly, with fine brown hairs; these are most numerous on the abdomen.

“I have no doubt these spiders may be found scattered along the southern coast of England wherever the Hastings sand formation predominates. I enclose a full-grown female; one of the tubes entire; another broken off at one end; an example of the exposed portion or cocoon-like extremity cut off, and another of the same part cut open longitudinally.”

“It may be added that Mr. Brown did not find a male, and wonders where they secrete themselves.

“From a careful examination of the purse or exposed portion of the tube, it is evident that there is no aperture by which the spider can pass into the open air: having with a pair of scissors cut off the purse, I find it can be readily inflated by means of a glass pipe introduced at the cut end, but it does not appear air-tight: when thus inflated, the minute apertures are probably closed. I have been unable to find these apertures in the specimen on the table; but the experiment proves, in a satisfactory manner, that, if present, they must open inwardly, and thus would, of course, be closed by the pressure of air from within. Of their existence I have little doubt, and the fact of my not finding them I attribute solely to a want of sufficient skill in manipulation and observation. The object of these valvular openings must be to admit air, for this could not enter the tube by any other means, and the spider, being a pulmonary breather, must require considerable supplies of oxygen.

“Returning to the subject of food, no one will doubt for a moment that a female spider, maturing her eggs for extrusion, is possessed of a good appetite, and has every

disposition to indulge it: any theory in contravention of this idea is opposed to all that we know of the natural history of spiders. I would then observe, *first*, that she has no access to the outer air, the exposed surface where insects, the ordinary food of spiders, are to be found; *secondly*, that the web is not glutinous; and *thirdly*, that I cannot find a fragment of an insect in any part of either of the tubes, and it seems to me that such fragments must occur if insects were the food of the spider.

“ Not contented with my own search for the remains of insects, I wrote again to Mr. Brown, stating the result, and begging him to investigate further, which he has done, and replies thus:—‘ I have never seen any flies or fragments of flies attached to any part of web; the only thing I can find is a portion of the cast-off skin of the spider herself, and this is in the cocoon or exposed end of the nest: in one of these there is a considerable quantity of their exuviae. With respect to flies or any other insects getting entangled in the web, I do not think it possible, *first*, because it is not glutinous or adhesive; and *secondly*, because it is always covered with grains of sand, which, supposing it had been glutinous originally, effectually prevent the adhesion of any extraneous object.’ In answer to my pointed inquiry, whether the spider ever comes out of the tube, Mr. Brown writes:—‘ I will not say that the spider never comes out of the nest, or is incapable of opening the extremity for that purpose, but I have never seen one do so, and I have no evidence that such is the case: the spiders in five tubes, which I extracted entire and kept at my lodgings, passed backwards and forwards, but never came out at either end: the longest of these perfect sacs was eleven inches in length.’ I therefore concluded, from the absence of fragments, that the spider does not feed on insects; and, from the structure of her domicile, that she has no means of obtaining them. Combining this negative evidence with the positive fact, that the spider is strictly subterranean, living in places where worms abound, burrowing to an unknown depth, occurring always in damp situations, and, to crown all, having before us the statement of a most careful and eminently cautious observer, that in one instance he found the spider had eaten a portion of a worm, we may, I think, congratulate Mr. Brown, not only on having restored a most interesting species to the British Fauna, but also on having discovered a singular aberration from the normal economy of the world of spiders. Nevertheless, on communicating this view of the case to Mr. Meade, that eminent arachnologist, with laudable caution, expresses himself thus:—‘ I cannot help thinking that it was only a fortuitous circumstance that an earthworm was found in the retreat of the Atypus, though it is quite possible the spider might feed on the worm when it came in its way: many spiders are so voracious, as even to devour one another. My reasons for giving this opinion are, *first*, that a worm could not readily penetrate through the firm silken walls of the tube, and the one in question may have been met with while the spider was making the excavation: *secondly*, the Atypus, in common with other mining spiders, and with all those spiders called by Walckenaér, *Incluses*, shuts itself up in its cell or tube by day, and wanders about in search of prey at night. It never appears to convey any food to its nest: the young when hatched are carried about on the body of the mother, just in the same way as the young of the Lycosæ. I think it most probable that the Atypus closes up with fresh silk every day the aperture through which it enters the sac, and that it makes a fresh hole through which to issue at night. The trap-doors and other contrivances constructed by exotic spiders, answer the purpose of keeping out enemies, in the same way as the external portion of the sac of the Atypus; and I believe that all these spiders are erratic in their habits, and none of

them bring home prey to their retreats.' Mr. Meade thus disposes of the facts, on which I felt inclined to lay great stress, the non-glutinosity of the web and the absence of the remains of insects in the sac. Mr. Brown, the discoverer, on the other hand, inclines to believe that worms are the normal food of these spiders, and supports his view by pointing out the depth to which some of the individuals burrow, which is far greater than required for safety; and also by the structure of the mouth, widely different from that of ordinary spiders, and expressly adapted for the mastication of flies: he thinks also that a worm once captured would not necessarily be killed by the spider, but might be devoured piecemeal while still living, an operation that seemed actually in progress in the isolated instance which he had an opportunity of observing: he has re-examined the sac, in reference to Mr. Meade's explanation of a nocturnal breach in the texture mended every morning, but he finds no evidence of such breaches. In reference to the difficulty urged by Mr. Meade, which a worm would find in passing through the wall of the sac, it seems more probable that the spider would obtain the worm at the lower extremity of the sac, where her excavations appear to be continually going on. The question of food must therefore remain *sub judice*, and other points in the history of this most interesting spider seem to invite further investigation."

The President, after alluding to previous discussions which had taken place at the Society, on the habits of the water-spider (*Argyroneta aquatica*), observed that he had repeatedly seen that species feeding on worms, but had observed that the spiders seemed rather to suck the juices of the worm than to masticate its flesh.

Mr. Westwood agreed in the explanation given by Mr. Meade of the fact observed by Mr. Brown.

Election of Fellows.

Henry Christy, Esq. and Alexander Goodman More, Esq., were elected Fellows of the Society

February 19, 1856.—ROBERT BROWN, Esq., Vice-President, in the chair.

Analysis of the Galls of Cynips Lignicola.

Dr. Vinen read a paper on the amount of tannin existing in the galls of the *Cynips Lignicola* of Hartig: he was induced to undertake the analysis by an account lately published in the 'Gardener's Chronicle,' which stated that a new gall had appeared in such abundance in Devonshire as to threaten the destruction of the oak. He found that the Devonshire galls contained but 17 per cent. of tannin, while the Aleppo gall, the well-known ink gall of commerce, contained 56 per cent.; the discrepancy was very great, and possibly in some degree attributable to the fact, that whereas all the Aleppo galls were entire, those from Devonshire were all perforated by the *Cynips*: it was a well-known fact that a sample of the galls of commerce was depreciated in value by the presence of any that were perforated. Dr. Vinen, however, wished to call the attention of the Society to the extraordinary discrepancy existing between the published analyses of the Aleppo galls, greater even than that

between his own analyses of the Devonshire and Aleppo galls. Sir Humphrey Davy's analysis yielded 26 per cent. of tannin, Pelour's 40, Leconnet's 60, Guibourt's 65, Mohr's 72, and Buchner's 77.

New Insects from Western Africa.

Mr. Westwood read a description of a new *Paussus*, which he named *P. Murrayi*, from New Calabar, on the Western Coast of Africa; and exhibited a new insect, allied to *Cistela*, with curiously dilated and winged metatibiae, from the same locality.

Election of Fellows.

Albert Hambrough, Esq., and the Rev. Charles Popham Miles, M.A., were elected Fellows of the Society.

ENTOMOLOGICAL SOCIETY.

January 7, 1856.—J. O. WESTWOOD, Esq., V.-P., in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—‘Transactions of the Linnean Society,’ Vol. xxi. Part 4. ‘Proceedings of the Linnean Society,’ Nos. 59, 59,* 60, 61, 62, 63, 64, 65, 66. Address of Thomas Bell, Esq., V.P.R.S., &c., the President; together with obituary notices of deceased Members, by John Bennett, Esq., F.R.S., the Secretary, read at the Anniversary Meeting of the Linnean Society on Thursday, May 24, 1855. ‘List of the Linnean Society of London, 1855;’ presented by the Linnean Society. ‘The Natural-History Review,’ Vol. i. and Parts 5, 6, 7 and 8; by the Dublin University Association. ‘The Entomologist’s Annual for 1856;’ by the Editor, H. T. Stainton, Esq. ‘List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, by Francis Walker, Esq., F.L.S., Part 5, Lepidoptera Heterocera;’ by the Editor. ‘The Literary Gazette’ for December; by the Editor. ‘The Athenæum’ for December; by the Editor. ‘The Zoologist’ for December; by the Editor. ‘Journal of the Society of Arts’ for December; by the Society of Arts.

Election of Members.

William Marshall, Esq., Springfield, Upper Clapton; John Thomas Syme, Esq., 11, Gower Street, Bedford Square; and James Thomson, Esq., 23, Rue de l’Université, Paris, were balloted for and elected Members of the Society.

Exhibitions.

Mr. Samuel Stevens exhibited a box containing three fine species of *Lucanidæ*, taken by Mr. Wallace at Sarawak, in Borneo, including a remarkable variety of *L. Brookiana*.

Mr. Edward Sheppard exhibited a specimen of *Lebia crux-minor*, taken by sweeping the long lythe at Selborne, in August last, by the Rev. G. Livesay.

Mr. Westwood called attention to some glasses on the table, containing water-beetles collected for the purpose of stocking aquariums, by Mr. F. S. Leach.

Mr. J. A. Turner exhibited a box of Coleoptera from Texas, containing many fine specimens of Longicorns; he also exhibited a splendid pair of *Goliathus giganteus*, from the Gaboon River, West Africa.

Mr. Stainton exhibited a specimen of *Callimorpha Hera*, and read a letter on the subject, addressed to him by Mr. Cooke, of Pelham Terrace, Brighton.

Mr. Newman communicated the following:—

Characters of Three Pseudomorphina in the Cabinet of Mr. Waterhouse.

“Mr. Waterhouse having most obligingly lent me his collection of Pseudomorphina, I have given the specimens a somewhat careful examination, and find three species which I suppose to be undescribed. I take the liberty of offering to the Society brief descriptions of these, and at the same time of soliciting the opportunity of examining other collections of these interesting insects.

“**PSEUDOMORPHA AMAROIDES**, *Newman.*

“*Laevis, glabra; antennis, sterno, ventre, pedibusque piceis; capite nigro, labro ferrugineo; prothoracis et elytrorum disco nigro, marginibus arcte at manifesto ferrugineis.* (Corp. long. ·3 unc. elytrorum lat. ·15 unc.)

“Smooth, shining, black above, pitchy black beneath; antennæ pitchy black; head smooth, with two obscure foveæ on the epicranium between the eyes, black, the labrum and mandibles bright ferruginous, the latter with the apices pitchy black; prothorax black, its lateral margins slightly dilated and recurved, and brightly ferruginous; near its posterior margin are two shallow ill-defined foveæ; the scutellum is conspicuous, triangular, acute and extremely glabrous; elytra black, their costal margin continuous with the lateral margins of the prothorax, and like them slightly dilated and recurved, and brightly ferruginous; at the base of each, very near the scutellum, is an obscure fovea; the posterior margin is sinuate, truncate, and tinged with dusky ferruginous, the marginal ferruginous line of prothorax and elytra is very narrow, but extremely well defined; the entire upper surface of head, prothorax and elytra is covered with very minute confluent punctures; these are only discernable under a lens of high power, and scarcely detract from the general glabrous appearance of the insect.

“There is a single specimen, the only one I have seen, in Mr. Waterhouse's cabinet. Its habitat is 3753.

“Although the genus *Amara* is now banished from our catalogues, the mind of the British Coleopterist, clinging fondly to the *word*, will see the drift of my specific name, should he ever meet with this pretty antipodean. Its size and figure at once call to mind the most familiar species of that most familiar genus.

“**ADELOTOPUS EPHIPPIATUS**, *Newman.*

“*Laevis, nitida, picea, elytrorum paginâ basali late testacea, prothoracis latera pallidiora valde dilatata et reflexa; prothorax elytris latior.* (Corp. long. ·2 unc. elytrorum lat. ·075 unc.)

“Smooth, shining, pitchy black; the sides of the thorax and the entire under surface of the insect inclining to ferruginous; the elytra at their base adorned with a

somewhat saddle-shaped testaceous mark; head, prothorax and elytra minutely and regularly punctured; head prone, deeply immersed in the prothorax; labrum rounded and much produced, cheeks enormously developed; prothorax much broader than long, slightly broader than elytra, its anterior margin excavated to receive the head, and produced into an obtuse teeth on each side of it, its lateral margins much dilated and recurved; scutellum very minute; sides of elytra parallel, slightly recurved, apex truncate, the corners rounded.

“ Examples of this insect, which, when its mouth is examined, will probably form a new genus, are in the cabinet of the British Museum, as well as in that of Mr. Waterhouse.

“ *ADELOTOPUS RUBIGINOSUS*, *Newman*.

“ *Lævis, nitidissimus, rubiginosus, omnino concolor, elytra sub lente forti subtilissime puncta.* (Corp. long. ·175 unc. elytrorum lat. ·07 unc.)

“ Smooth, extremely shining, ferruginous and perfectly concolorous on every part of the upper and under surface; head rather large, convex, prone; eyes large, distant, black, prominent; prothorax very convex, very glabrous, its lateral margins slightly dilated and recurved; scutellum rather large, conspicuous, triangular; elytra very convex, parallel, the costæ slightly dilated and recurved, the apex truncate, the disk exhibiting a very slight appearance of striation.

“ This pretty little beetle certainly resembles Mr. Westwood’s *Adelotopus aphodioides*, described at p. 404 of the fifth volume of the new series of Guérin’s ‘ *Revue et Magasin de Zoologie*.’ There are specimens in the cabinet of the British Museum, as well as in that of Mr. Waterhouse.”

Nests of Hymenoptera from Port Natal.

Mr. Smith exhibited some nests of Hymenopterous insects collected by Herr Guenzius at Port Natal, and read the following notes respecting them:—

“ I have the pleasure of exhibiting to the Society a number of nests of exotic Hymenoptera, collected by Herr Guenzius at Port Natal. This collection is rendered exceedingly interesting, by each nest having specimens of the insects by which it was constructed sent with it; it also receives additional interest from the fact of all the species being described ones. I have thought it desirable to give a reference to the work in which each species is described, as well as a description of the nests themselves.

“ 1. *Synagris calida*, *Vespa calida*, *Linn. Syst. Nat.* Vol. i. p. 952. The nest of this insect is constructed of the red earth common to the neighbourhood of Port Natal; the form at the base is an irregular oval; its length at its greatest diameter is nearly three inches; the height of the nest is an inch and a half, its general form being somewhat that of half an orange, having one side slightly elevated, forming the entrance to the nest; the bottom of the nest shows that it has been attached to a flat surface; only four cells are visible, all of which are empty; in two of these were found the remains of the corneous heads of some Lepidopterous larvæ; the upper surface has a hole opposite each of the empty cells, one being immediately under the larger opening or entrance used by the parent insect: the other holes are a little smaller: from these no doubt the insects made their escape: there is room for two more cells, and such may possibly exist, but neither the under nor upper surface exhibit any traces of them.

“2. Nest of *Synagris mirabilis*, *Guér. Voy. en Abyss. de Le Févre*, vi. *Ins.* p. 359, pl. 8, fig. 8. This nest is much smaller than that of *S. calida*, and is probably in an unfinished state; its form is somewhat quadrate, with the angles rounded; it contains only two cells, each having, as in the other species, a separate outlet. This nest is constructed of a different-coloured earth, being of the ordinary mud-colour. It is exceedingly interesting to find that the habits of this genus of wasps is similar to that of *Odynerus*. I have in my possession a nest of *O. parietinus* formed of earth in a similar manner.

“3. The nest of *Eumenes tinctor*, *Christ. Hym.* This is a very abundant and well-known species. The nest differs from that of every species of this genus with which I am acquainted: all the nests which I have seen are globular, or sometimes flask-shaped, each consisting of a single cell. The only British species, *Eumenes coarctata*, constructs a small nearly globular nest of mud, forming a single cell; it constructs a separate nest for each individual: these nests I have found in Hampshire, attached to twigs of heath. The nest, however, of *Eumenes tinctor* is very different; it is pear-shaped and constructed of mud, being three inches and a half long and nine inches in diameter at its widest part, but is considerably narrower at the top and obtuse at the bottom. This nest appears to have been constructed amongst rank grass or reeds, having blades passing through it; by these means it was doubtless held in a suspended position: there are twelve outlets, showing that a number of individuals have issued from it.

“4. *Raphigaster Guineensis*, *Sauss.* This is the *Zethus Guineensis* of *Fabricius*, *Syst. Piez*, 283, 2. The nest of this species consists of a number of exposed cells attached to each other, a slender twig forming the base of attachment; the cells are about an inch in length, and of a very thin papery texture; the number in the nest exhibited is seventeen; there are eight unfinished cells: what may be an average number in finished nests has not been ascertained, but either it must be considerable, or the number of nests very great, as the insect is extremely abundant.

“5. *Mischocyttarus labiatus*, *Sauss.* *Zethus labiatus* of *Fabricius*, *Syst. Piez*. 284, 6. This nest is very similar to the preceding in form and mode of attachment; it is placed upon a slender twig; the texture is, however, very different, being apparently constructed of decayed wood: it is very fragile, and breaks with a slight touch, similar to the cells of *Vespa vulgaris*: the cells are of a circular form.

“6. *Icaria guttatifrons*, *Sauss.* This wasp is described in *Mon. des Guêpes Sociales*, p. 40, 19, pl. 5, fig. 8. Its cells are exposed in the same manner as those of a *Polistes*, and are hexagonal. This nest is of the greatest interest, as exhibiting a direct contradiction to the theory that all cells are originally constructed of a cylindrical form, and that the hexagonal form is attributable to the fact of the insects working in concert in opposite cells, the space between the cells gradually falling into straight sides, thus forming regular hexagons; consequently the outer surface of the exterior cells will be rounded. The nest of this insect exhibits a series of regular hexagons, the outer cells being as sharply angulated as the inner ones.

“7. *Eumenes* —— This is a small mud nest, of globular form, about the size of a cherry, adapted to contain a single larva; it is attached to the back of a leaf.

“8. *Odynerus* —— This wasp constructs a nest in hollow reeds, lining and separating the cells with red sandy loam, in the same manner as the *Odynerus lœvipes* of Britain.

“9. *Pelopaeus chalybeus*, *Smith*, *Cat. Foss. Hym.* Part 2. The nest of this insect is especially interesting. The species of the genus *Pelopaeus* are popularly known as mud-daubers in America. They differ in the mode of constructing their nests; some species appear to place single cells in different situations; others construct a number close together, and even one cell upon another. *P. chalybeus* differs from all the species whose habits have been recorded; it constructs single cells of cow-dung, attaching them to stems of grass. From one of the nests I extracted a perfect specimen of the insect.

“10. *Chalicodoma cælocera*. This is the *Megachile cælocera* of my ‘Catalogue of Apidæ,’ published by the British Museum. The genus *Chalicodoma* of St. Fargeau cannot be maintained upon structural differences: the habit of the species alone entitles it to the rank of a subgenus. These insects construct nests of clay or sandy loam, attaching them usually to walls; a number of cells are formed, and when the whole are furnished with the requisite supply of pollen and honey the cells are closed, and the whole then covered over with a mass of sandy loam. The nest of *C. cælocera*, which I exhibit to the Society, is of an elongate form, being seven inches in length, two and a half in width, and one and a half in elevation at its greatest convexity; there are seven outlets, from which the bees have escaped: probably there are others which have perished in the cells. The mixture of red earth and small pebbles, of which the nest is composed, is excessively hard, and it must be a task of great labour to the bee before it can perforate so hard a substance; both sexes are therefore furnished with short, exceedingly stout, toothed mandibles for that purpose.

“11. This is the nest of a species of *Ceratina*, formed in the stem of a shrub which has a large pith in the middle, similar to the common elder of Europe. The channel formed by the bee is three inches in length, exactly similar to that formed by *Ceratina cærulea*.

“12. Nest of a small species of *Anthidium*,—*A. cordatum*, *Smith*. This nest is interesting, as showing a reverse of the habit of the British species of the genus, *A. manicatum*, which usually selects ready-formed holes in posts or rails; its nests have also been found in the locks of out-houses, &c., always, I believe, in some ready-formed place of security; *A. cordatum*, on the contrary, attaches its cells to the stems of plants; that which I exhibit consists of two; these are formed apparently of a resinous substance, which melts when heated; outside, the cells are covered with the woolly down of plants.

“13. This is a portion of a dead branch, probably having formed part of some railing or fence, into which *Xylocopa trepida* has burrowed, the entrance being large enough to admit of the little finger; the diameter of the tube inside is exactly three-fourths of an inch.”

Mr. Lubbock read a paper intituled ‘On some Entomostraca collected by Dr. Sutherland in the Atlantic Ocean.’

Mr. Westwood read a paper on *Cryptodus* from New Holland.

Mr. Stainton read a paper on three Indian species of Micro-Lepidoptera bred by Mr. Atkinson.

Mr. Janson communicated some notes on *Hygrotus bisulcatus*, *Curt.*, and *Apion Curtisii*, *Kirby*, *MSS.*, of which insects drawings were exhibited at the December meeting, contending, on the authority of Dr. Erichson and subsequent writers, that

the first-named species is the *Hydroporus unistriatus*, *Illig.*; and that, as the late Mr. Stephens had applied the name of *Curtisii* to a totally different species of *Apion*, prior to the publication of Mr. Curtis's description of the *Curtisii*, *Kirby, MSS.*, it is evident that a new name must be imposed on Mr. Curtis's insect.

Anniversary Meeting, January 28, 1856.—EDWARD NEWMAN, Esq., F.L.S., in the chair.

The Reports of the Library and Cabinet Committee and the Treasurer's audited accounts were read and approved: the latter showed a balance in hand of £74 19s. 5½d.

Messrs. J. S. Baly, F. P. Pascoe, W. W. Saunders, and G. R. Waterhouse were elected members of the Council, in the room of Messrs. E. Newman, A. F. Sheppard, Edward Sheppard, and S. L. Waring. W. Wilson Saunders, Esq., F.R.S., &c., was elected President; S. Stevens, Esq., F.L.S., Treasurer; and Messrs. J. W. Douglas and Edwin Shepherd, Secretaries.

The Chairman delivered an Address on the State and Management of the Society, giving also a summary of its proceedings during the year, and an analytical notice of all Entomological Books and Papers published in Great Britain during the same period. The Meeting passed a vote of thanks for this Address, and ordered it to be printed.

A vote of thanks was passed to J. Curtis, Esq., for his services to the Society and his courteous conduct in the Chair; and on the motion of Mr. Westwood, it was resolved that a portrait of Mr. Curtis should be procured and hung up in the Meeting-room.

Votes of thanks were then passed to the Treasurer and Secretaries.—J. W. D.

February 4, 1856.—W. W. SAUNDERS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the respective donors:—‘*Exotic Butterflies*,’ Part 17; by W. W. Saunders, Esq. ‘*Revue et Magasin de Zoologie*,’ 1855, Nos. 10 and 11; by the Editor, M. Guerin-Méneville. ‘*Proceedings of the Royal Society*,’ Vol. vii. No. 16; by the Society. ‘*Entomologische Zeitung*’ for December, 1855; ‘*Entomologische Zeitung, Sechzehnter Jahrgang*’ (1855); ‘*Linnæa Entomologica*,’ Vol. x.; by the Entomological Society of Stettin. ‘*List of the Specimens of Lepidopterous Insects in the Collection of the British Museum. Part vi.—Lepidoptera Heterocera*’; by the Author, F. Walker, Esq., F.L.S. ‘*The Journal of the Society of Arts*’ for January; by the Editor. ‘*The Literary Gazette*’ for January; by the Editor. ‘*The Athenæum*’ for January; by the Editor. ‘*The Zoologist*’ for February; by the Editor. ‘*Memorias de la Real Academia de Ciencias de Madrid*,’ Tomo ii. 1a Serie; ‘*Ciencias Exactas*,’ Tomo i. Parte 1a.; The same, Tomo i. 3 Serie; ‘*Ciencias Naturales*,’ Tomo i. Parte 3; ‘*Resumen de las Actas de la Academia Real de Ciencias de Madrid*,’

1852 à 1852; The same, 1852 à 1853; by the Royal Academy of Sciences of Madrid. 'Swammerdam's Historia Insectorum Generalis,' 4to; by John Curtis, Esq.

The President returned thanks for his election, and nominated as Vice-Presidents for the year, Messrs. J. O. Westwood, G. R. Waterhouse, and Frederick Smith.

Election of Members.

A. H. Haliday, Esq., 23, Harcourt Street, Dublin, was balloted for and elected a Member of the Society.

Exhibitions.

Mr. Samuel Stevens exhibited a splendid new Lamellicorn beetle, of the genus *Odontolabris*, from Borneo.

Mr. Moore exhibited a number of cocoons of *Megachile lanata*, found in an old buffalo's horn from Northern India; one of these contained an immature parasite, probably a *Hedycrum*.

Mr. Baly exhibited a specimen of the rare *Cryptonychus porrectus*, *Gyll.*, received from Old Calabar by Mr. Murray, being the only specimen known in Britain; this species is extremely interesting, from the fact of being an American form, though found in Africa.

Read the following note by Mr. Hewitson, dated the 28th of January :—

Sound produced by the Peacock Butterfly.

"One morning about a fortnight ago, whilst dressing, I noticed something upon the floor, which I took to be a dead leaf driven in by the wind, and was surprised when I picked it up and placed it on the table, to find that it was a peacock butterfly (*Vanessa Io*). They had been cleaning out my room and had driven it from its winter quarters; I had handled it rather roughly, which it resented, by spreading out its wings horizontally to their fullest extent and rubbing them rapidly together; it produced a distinct sound like the friction of sand-paper: this it continued to repeat for some time and seemed greatly exasperated. It might be partly in my own imagination, but its palpi, the position of its legs, every motion seemed to express passion. I brought it down stairs and placed it on a table in the drawing-room, where Mr. Westwood, who was with me at the time, heard the noise faintly, but we tried in vain to excite it again to anger.

"I intended to examine the base of the wings and try to ascertain the means by which it produced the noise, which has never yet been done with the living insect, but it stole away and hid itself so effectually as to elude our search.

"M. Lacordaire mentions a similar sound produced by butterflies of the genus *Ageronia*, whilst on the wing, which he compares 'a celui d'un parchemin très sec qu'on froisserait entre les mains.'

"The clicking noise mentioned by Mr. Darwin was produced by a butterfly of the same genus.

Mr. Douglas observed that the Rev. Joseph Greene had noticed a very similar circumstance in hibernating specimens of the same species, *Vanessa Io*, of which he communicated a note to this Society, and which is published in the 'Proceedings' for 1853, page 98.

Mr. Baly thought the sound was produced by respiratory action, which, doubtless, is suspended during hibernation, and suddenly called into action on the insect being disturbed; he considered it might be analogous to that produced by the first inspirations of air by a newly born infant.

Mr. Newman read the two following notes:—

The Lost Spider.

“The Rev. Revett Sheppard has often noticed in the fen ditches of Norfolk a very large spider, which actually forms a raft for the purpose of obtaining its prey with more facility. Keeping its station upon a ball of weeds about three inches in diameter, probably held together by slight silken cords, it is wafted along the surface of the water upon this floating island, which it quits the moment it sees a drowning insect; not, as you may suppose, for the sake of applying to it the process of the Humane Society, but of hastening its exit by a more speedy engine of destruction. The booty thus seized, it devours at leisure upon its raft, under which it retires when alarmed by any danger.”—*Introduction to Entomology*, i. 428, Edition of 1828. There is good ground for giving implicit credence to the foregoing statement; Mr. Sheppard was an acute entomologist, a careful observer, and a gentleman of unquestionable veracity. It is therefore remarkable that this large spider should, even at the present hour, remain unknown to arachnologists. I shall be greatly obliged to any Norfolk entomologist who will seek it, and, if successful, send me specimens, together with any additional notes on its interesting economy.”

The Silk Spider of St. Helena.

“The silk spider of St. Helena is very handsomely marked and banded: it spreads its web in the warm valleys, and the fibres of its cocoon are so strong as readily to admit of being spun: indeed, they might be used as a substitute for silk.”—*Foster's Voyage*, i. 373. There is scarcely a statement in the volumes where this is extracted but has been verified by subsequent writers. Can any entomologist give further particulars of this silk spider?”

Mr. Newman read a paper entitled ‘Characters of apparently undescribed Australian insects, collected at Moreton Bay by J. Gibbon, Esq., including the following species of various orders,—*Dorcostoma Jansoni*, *Alaus Gibboni*, *Stenoderus quietus*, *Euploea Lycophon*, *Pangonia Walkeri* and *Dasypteron Grantii*.’

Mr. Stainton read a paper entitled ‘How may the onward progress of the Study of Entomology be best furthered?’

Part 7, Vol. iii., n. s., of the Society’s ‘Transactions,’ recently published, was on the table.—*J. W. D.*

Letters on Natural History. By the late FREDERICK HOLME, Esq., to EDWARD HEARLE RODD, Esq., by whom they are obligingly communicated.

[These letters, although having no bearing on what may be called the Zoological news of the day, are replete with those records and observations which give to White's 'Selborne' its enduring interest.—*E. Newman.*]

“Meysey Hampton Rectory,
Fairford, Gloucestershire.

“DEAR SIR,—I am afraid you will think me extremely tardy in fulfilling the promise I made, of writing to you on the ornithological points we have discussed, but I have since my return home been without my books on the subject, which I had lent during my absence, and have received only within a few days. I will begin with one point on which I remember you wished for information,—the distinction of the *Scolopax Sabini*: it may be known, according to Sir W. Jardine and Mr. Selby, by having twelve feathers only in the tail, whereas the common snipe has fourteen, and the great or double snipe sixteen: the jack snipe has twelve, but it can never be confounded with *S. Sabini*. Lesson, in his ‘Manuel d’Ornithologie,’ mentions a new species of snipe, which he calls *Scolopax Brehmii*, and which he says resembles the common snipe in everything except in having sixteen feathers in the tail, instead of fourteen, and in being altogether mute: I think it is probably a factitious species, but I mention it in case of your chancing to fall in with any such bird. As far as I could ascertain, while in Ireland, the birds wanting in the Irish Fauna seem nearly the same as those which you told me were rare in Cornwall: the nuthatch, in particular, is almost unknown, a pair in the Kildare-street Museum having been pointed out to me as almost the only instances of its occurrence in Ireland; the redstart is also very rare. The common hawk of those parts I saw most of (Kilkenny, Kildare and Queen’s County) is the sparrow hawk, which abounds greatly, and seems to live in families; the kestrel is not so common. The bank martin seems more generally diffused than in England. I saw all the four British species of swallow in company on the river Nore, below Kilkenny. Speaking of swallows, the great white-bellied swift (*Cypselus alpinus*) has been shot three or four times in Ireland within a few years, and once in England, at Attleborough, in Norfolk, in September, 1831; I think, but am not sure, that a second instance

has occurred near Romford, in Essex. I have heard it suspected by many good ornithologists that the barn swallow of America (*Hirundo rufa*, Linn., *H. Americana*, Wilson) is by no means uncommon in England, but confounded with the common chimney swallow (*H. rustica*), from which it differs chiefly in having the under parts from chin to vent light chestnut instead of white. I have shot myself, at different times, six or seven specimens so coloured, including all ages and both sexes, and have seen others in bird-stuffers' shops: the under parts in these were light chestnut, inclining to buff: Wilson, in the 'American Ornithology,' says the female has them rufous-white, and also that the bird does not build in chimneys like *H. rustica*, but in barns and outhouses. I intend to keep a look-out for the bird next summer, and if you do the same we can compare the result of our observations. I intend to mention the point to Mr. Gould, to draw his attention to it.

"Since writing the last page, I have found the memorandum of the second English occurrence of *Cypselus alpinus*, which was at Kingsgate, near Margate. Another bird to which I would draw your attention is the firecrested wren (*Trochilus ignicapillus*, Temminck), a single specimen of which is in the possession of Mr. Jenyns, of Swaffham-Bulbeck, Norfolk, it having been brought into his house by a cat: it has probably been overlooked, from its close resemblance to the common goldcrested wren, from which it differs in having the black band on each side the crest bounded first by a white stripe, and that again by a second black band through the eye; whence Temminck gives it the French title of 'roitelet à triple bandeau.' The arctic gull, properly so called (*Lestrus parasiticus*) is not found in England, and scarcely ever so far South as the Shetlands: the bird which has hitherto passed under that name with British naturalists, and of which the blacktoed is the young, is now distinguished as *L. Richardsonii*, and differs greatly, in shape, size and colour, from the true *L. parasiticus*. Are you aware that the grebes moult all at once, like the duck tribes? A dabchick (*Podiceps minutus*) which I shot in the change from summer plumage, September 23rd, had only young quills in the wings, so as to be unable to fly, and when we skinned it was so pen-feathered that it could scarcely be made a skin of. Two specimens of the Caspian tern, I am told by a correspondent, were shot in 1830, near Yarmouth, but whether the Yarmouth in Norfolk or that in the Isle of Wight my informant sayeth not. A single specimen of the real great white heron (*A. aequinoctialis*), a bird as large as or larger than the common heron, was shot at Hornsea Mere, East Riding

of Yorkshire, in the winter of 1821, after haunting the neighbourhood some time: it is now in the collection of Mr. A. Strickland (the brother of the Yorkshire M.P.) who gave me the account: it is the only *authenticated* British specimen. The same gentleman has a specimen of the black stork, shot last spring in Lincolnshire.

“I make no apology for giving you all these isolated instances, as I know you are as fond as myself of going into the detail of natural history.

“Will you tell Mr. Dennis John that the very large water beetle which he may perhaps remember giving me proved to be the *Cybister Röselii*, an insect of which I believe there is only a single authenticated British specimen, besides the one he gave me; and as he told me that he had several times seen them in the ditches of the Marazion marshes, he would confer a great benefit on Science by securing them wherever he meets with them, taking great care to keep the legs, antennæ, &c., entirely uninjured. I took several very good insects in Ireland; but the collection I made in the neighbourhood of Penzance, which I sent to an excellent entomologist for the purpose of having the insects named, turned out to contain nine entirely new species of Coleoptera, besides four others new to Britain, and a great many very rare ones: one of the Carabideous beetles will form a new genus; and a beautiful *Cassida*, which I took in the hedge behind Trenear, is an entirely new insect. If you see Mr. Henry Hocken, of Phillack, will you tell him that I shall feel greatly obliged if he will write me an account of any observations or rare species in Entomology that may at any time fall under his eye in Cornwall, as I and several other lovers of Entomology are endeavouring to establish a sort of entomological correspondence in different parts of the country, for the purpose of interchanging our remarks, and, where practicable, our specimens. I have just finished arranging afresh all my Coleoptera, of which I have more than 600 British species.

“Any remarks on any subject in Zoology which you may be disposed to favour me with I shall be very glad to receive, if you have any inclination to correspond on the subject.

“Believe me very truly yours,
“F. HOLME.”

“Meysey Hampton, Fairford, Gloucestershire,
“January 11, 1834.

“DEAR SIR,—I intend to make this letter a long one, but I am afraid that I shall repeat several of the detached scraps which I gave

you in my last, as I neglected to keep a list of contents of the letter, a plan which I recommend to you in a scientific correspondence, as it obviates the risk of saying the same thing over and over again in successive letters, which you are otherwise likely to do when you communicate detached facts; and of detached facts every useful body of science must consist, in my opinion, though too many modern naturalists, and particularly ornithologists, seem to frame their systems in the first place, and to look out for the facts to support them afterwards. I am afraid I led you into an error in my last, in quoting Selby on the *Scolopax Sabini*; I do not know whether his Treatise on the Water Birds is yet published or not; I quoted from some Illustrations of Ornithology, chiefly of foreign birds, published in conjunction some years since by Sir W. Jardine and Mr. Selby. With respect to the small woodcock you mention as shot at Trebartha, a very small variety is said by Lesson and by Storr to occur occasionally of the common species; and the American woodcock (*Scolopax minor*), which is *said* to occur sometimes in Europe, answers in size and weight to the specimen you mention, but has the nape barred as in the common one, not marbled as in yours: the American woodcock is further distinguished by having all the under parts uniform tawny, rather bright. *Scolopax Sabini* is easily known, even in a glass case, from any of the woodcocks, by the legs being bare above the knee, which in the woodcocks are feathered to the joint; *S. Sabini* has in other respects much of the *port* and appearance of a small woodcock, but differs in colour, and has the crown entirely black. Tell me in your next whether you have made anything out of your specimen from these hints. On the variations of colour which you mention of the peregrine falcon, I will quote a letter which I lately received from an excellent naturalist, N. C. Strickland, Esq., son of Sir Wm. Strickland, of Boynton, in Yorkshire: he says, 'I consider that there are three marked varieties: the first, which is very rare, and by far the best for falconry, is very small, and rather bow-legged; blue-gray on the back, like a heron; head very small; eye keen; legs nearly blue; lower belly and thighs grayish white in old birds, with the markings blackish gray; the young have the back grayish brown, with scarce any paler edgings to the feathers, and have no tinge of rufous in their plumage. The second var. (called owl-hawks by the falconers) are very large, with large and very dark eyes; the young reddish brown above, inclining to black, the feathers with broad and distinct ferruginous edges; lighter parts with a strong rufous tinge; legs yellow: old birds bistre-brown above; under parts, where light, dirty brownish

white, with scarce any yellowish or grayish; the dark markings beneath the same bistre-brown as the back: this I conceive to be the great-footed falcon of Audubon, Wilson, &c; it is the rarest of all the varieties, and useless for hawking, being spiritless and cowardly. The third or common variety is intermediate between the other two. This I consider a valuable communication, as Strickland, besides his ornithological knowledge, is conversant with falconry, and has travelled much in Norway, where the birds abound.

" Both the forktailed petrel and the common storm petrel have been more common than usual inland this year, in consequence of the storms. The common species I have often seen out at sea in blowing weather, following in the ship's wake, with a low incessant wailing cry of ' weet, weet: ' they skim on the surface in the manner represented in Bewick's plate, except that the wings are always expanded, whereas he shows them closed. I never saw them at sea in calm weather, and hardly ever within sight of land: I once saw one nearly opposite Swansea, in the Bristol Channel, in very stormy weather, but the sailors regarded it as an uncommon occurrence, and said that they were scarcely ever seen above the Lundy Island. *Procellaria Leachii*, of which you say you have a specimen, breeds in the Hebrides, particularly St. Kilda. I never saw the storm petrel actually *swim*, though they keep their feet almost in the water while skimming as I mentioned above. There are two other species of storm petrel, besides *P. pelagica* and *P. Leachii*; one of them, *P. oceanica*, found in the South Pacific, and distinguished by the comparative length of the tarsi; and the other, *P. Americana*, on the coasts of North America. These four nearly allied species have been separated by Mr. Vigors as a distinct genus from the true petrels, under the name of *Thalassidroma*.

" I congratulate your Western district on the accession of that beautiful songster the blackcap to its Fauna; but I am afraid I shall not be able to furnish you with much information on your favourite group, the *Sylviadæ*, as I am ashamed to say that I am far less intimately acquainted with them than with many other less common groups. The greater pettichaps or fauvette I remember to have heard frequently about seven or eight years since, in the park at Littlecote, Berkshire, the seat of General Popham; but the bird is seldom seen, as it lies in thick bushes, whence it is almost impossible to drive it: the song is most beautiful, but very difficult to identify or describe, as it consists in a great measure of imitations of the song of the other birds, in which species of mockery it is, I think, unri-

valled among our British songsters. This is the sum of my personal knowledge of the bird; but I am going up to Oxford next month to take my M.A. degree, and thence to visit a friend in the neighbourhood, whose diligence of research and observation in almost every branch of Zoology are almost unrivalled, and from him I doubt not I shall be able to get you something more respecting the bird in question, which I know is found in his neighbourhood. I am thinking of getting a good air-gun cane: I had the loan of one a short time since, and found it very useful for getting small birds, without the noise and *éclat* of blazing away at their poor little carcases with powder and shot.

" I have not seen any swallows or martins since the general migration; but I think that the account I gave you in my last, of the four swallows in the roof of the Kildare-street Museum, tends to prove that they may hibernate without becoming torpid; though I cannot agree with you in considering the winter torpor of the bat tribes as an analogous case, since the much higher temperature of the blood and greater rapidity of circulation in birds must act as a preventive to torpor in a much higher degree than the lower temperature of quadrupeds; though at the same time I believe it is now nearly ascertained, however anomalous it may appear, that the cuckoo hibernates here, buried in dry leaves and moss: I am told by a gentleman in this neighbourhood that several are annually found by the gamekeepers in that state, at the roots of furze-bushes on Millborough Common. I have lately found, among my bird-skins, one which appears beyond doubt to be the female American swallow, respecting which I mentioned my suspicions in my last. I have now no doubt in my own mind of the frequent British occurrence of that species, but shall not make it public till I have the opportunity next summer of procuring specimens of it and the common species for comparison, and of ascertaining whether the difference mentioned by Wilson of the place of nidification holds good in England: its breeding in barns and outhouses in America may perhaps arise from there being, in many parts of the United States, no chimneys for it to breed in, the most cogent of all reasons against it ' I guess.'

" Of the chiff-chaff and willow wren being specifically distinct I have no doubt, as I know them both well; but it is very difficult to make out anything respecting them from books, from the great entanglement of their synonymy. I do not think the synonyms which Rennie, in his edition of Montagu, quotes from Temminck, for the willow wrens and sauvettes, are often right. Do you know which of

the willow wrens it is which White says 'cantat voce stridulâ locustæ'? I never heard any bird with such a note except the grasshopper warbler, but my knowledge of the *Sylviadæ*, as I said above, is but small, so if you can tell me I shall be obliged. The fire-crested wren (*Sylvia ignicapilla*, Temminck) is undoubtedly a different species from the common goldcrested wren, having three bands on the head instead of one; but the two species were very much confounded by the Continental naturalists till the differences were clearly pointed out by Temminck and Brehm: the bird described and figured by Buffon as 'Le Roitelet' is the fire-crested wren: they differ also in habits, the firecrested haunting bushes and the lower branches of trees, while our common species prefers the higher branches of firs and pines, both for habitation and nidification: if you saw the two birds together you could not doubt their distinction. I have not specimens by me, but my Oxfordshire friend has, and if you will tell me in your next whether you think it worth double postage I could enclose you drawings of the heads, the difference in colouring of which would settle the point with you: I confess that I feel interested in it, as this beautiful little species *may* be common among us and yet have escaped detection. No author has yet mentioned the firecrested wren as British, and I believe Mr. Jenyns' specimen, which I mentioned in my last, is as yet the only ascertained English one.

"The bee-eater and golden oriole, which you mention as having been shot in your neighbourhood, are very good British birds: the glossy ibis which you mention is also generally reputed rare in England, but is, I think, much more common than is thought; the similarity of its habits and appearance at a distance with that of the curlews, and the great variations of age and season in its plumage, are the occasion of many specimens passing unnoticed and being consigned to the spit instead of to the Museum.

"You will, I am sure, excuse my saying that you are mistaken in supposing the horse-shoe bat to be the *Vespertilio altivolans* of White, which is generally considered to be the *V. Noctula* of naturalists: it is thus described in Griffith's 'Synopsis of Mammalia':— 'Body yellowish; membranes brown-black; ears oval, but approaching a triangle, inner ears pointed; length of body about 3 inches; expanse 16 inches.' The *V. serotinus*, which is nearly allied to the last, has 'the back red-brown, brighter in the females; membrane black; ears as in *V. Noctula*, but larger; length of body under 3 inches; expanse 14 inches.' The horse-shoe bat of England is about 3 inches in body, 14 inches in expanse; reddish ash above,

whitish gray below; and it has no internal auricle or secondary ear within the outer one, which, with the bi-lanceolate nasal appendage, at once distinguishes it from every other British species. There are said to be ten or twelve species of British bats, but I do not know much about them; in fact, for the last two years I have devoted myself so exclusively to Entomology that I have paid scarcely any attention to the other branches of the Science, but having now got a tolerable footing among the insects I mean to divide my attention between them and my old friends the birds. Next summer I have some idea of studying fishes, which are much neglected in England, but I doubt whether I shall make much of them.

"I believe I have now discussed, to the best of my ability, all the topics started in your last letter, and will now proceed with whatever scraps of information I have collected since my last.

"The little bustard (*Otis tetrax*) was shot on the 23rd of December last by a farmer, at Brockley Wood, somewhere in the neighbourhood of Oxford: it is now one of the rarest English birds, and I cannot conceive how it continues to subsist in the island, the instances of its capture being so 'few and far between;' while it is seemingly too large a bird to escape detection, and much too feeble of flight to be capable of crossing the Channel from France.

"An itinerant bird-stuffer, named Burl, showed me lately a specimen of the scissor-tailed goatsucker of S. America (*Caprimulgus psalurus* of Temminck), which he assured me he himself shot at Tewkesbury, in Gloucestershire, June 19th, 1825: I should not of course give implicit credit to a bird-stuffer's account of a bird which he had on sale; but from the *soft* and fresh appearance of the skin, which had not the hardened and compressed air of one which had been packed and sent across sea, I should almost feel inclined to credit his statement, in which case the bird would be a singular addition to our British Fauna. There is an uncoloured plate of it in Griffith's translation of Cuvier, which I think you have in your public reading-room. The same man told me that in December, 1832, he saw a specimen of the longlegged plover at Frensham pond (the same place whence White's specimen came from), but could not get at it: at the same time there were some specimens seen there of the Egyptian spurwinged plover, one of which was shot. The same man showed me a specimen of the black-billed whistling duck of the West Indies, which he told me was sent to him in the flesh twenty-two or twenty-three years ago, and which he understood to have been shot on one of the Cumberland lakes.

He had also a pair of buff herons, shot near Dover, in January, 1832.

“Strickland writes me word that two specimens of the Carolina cuckoo (*Coccyzus Americanus*) have been lately shot in Ireland, and one in Wales, but does not give the dates. The American swallow-tailed kite (*Falco furcatus*) has been several times of late years killed in Ireland and England; one was shot two years since in Wensleydale, Yorkshire, and another in the Bishop of Winchester’s park at Farnham, last summer. The eagle owl was shot in the last week of the old year, at Weston-on-the-Green, nine miles from Oxford,—a singular instance of its occurrence so far South.

“My brother shot a water-rail the last day of the year, and we made a skin of it, as it is not a very common bird hereabouts: it was prodigiously fat. I am afraid we shall not get many of the rare water birds this winter, as it seems to be set in for an open season; but you on the sea-coast have a better chance for such windfalls than I have in my inland situation.

“I should have mentioned above, in speaking of the Noctule bat, that the length as there given is exclusive of the tail, which is an inch and a half more. I myself think that White’s description comes nearer to *V. serotinus*, but Fleming and Sir W. Jardine refer it to *V. Noctula*, the synonyms of which have been much confounded with those of *V. serotinus*. In the Catalogue of the Zoological Society’s Museum, in Bruton Street, I see a species of bat mentioned as British by the name *Plecotus brevimanus*, *Jenyns* (short-armed long-eared bat), but I do not remember the specimen, nor in what it differs from the common long-eared bat (*P. auritus*). As you seem to have studied the bats, can you tell me whether you ever observed any difference? Fleming says that the *V. Noctula* (or *altivolans* of White) winters in Italy: can you tell me the time of its migration, as you say it is not uncommon with you?

“As a proof how much birds are influenced in their habitat by temperature, I give you a list of European birds found in the Indian provinces at the foot of the Himalaya, where the average climate is much as in England: the list is partly from the notes of the Hon. F. J. Shore, partly from specimens in the Liverpool Museum, collected in India by Mr. Everest: those which may be slight varieties of the European species are marked with a query:—*Falco subbuteo*; *F. tinunculus*; *F. nisus*; *F. ater* (the black kite of Germany); *F. rufus* (moor buzzard); *F. cyaneus* (hen harrier); *Strix flammea*; *S. brachy-*

otos; *S. otus*; *Corvus corone*; *Oriolis galbula*; *Sylvia Phoenicurus*; *Saxicola rubicola* (stonechat); *Motacilla flava* (yellow wagtail); *Fringilla domestica* (common sparrow), only slightly differing from ours; *Fringilla carduelis?* (goldfinch)—I think this is probably an allied species, *F. spinoides*, *Gould*, wanting the black and white on the head; *Cuculus canorus*; *Sitta Europaea*, a slight variety, deeper coloured on the breast; *Upupa Epopis*; *Alcedo ispida*, a trifling variety, rather smaller; *Hirundo riparia*; *Pterocles setarius* (the pintail grouse of Spain); *Perdix Francolinus* (the Francolin partridge); *Tetrao Coturnix*; *Calidris arenaria* (sanderling); *Himantopus melanopterus* (longlegged plover); *Charadrius pluvialis?* *Jardine* and *Selby* think may be specifically distinct, but it is very closely allied; *C. hiaticula?* *Vanellus melanogaster*, *Temm.* (*Tringa squatarola*, *Linn.*); *Ardea Egretta*; *A. Nycticorax*; *Ibis falcinellus* (glossy ibis); *Numenius arquatus* (curlew), a small variety; *N. phaeopus* (whimbrel); *Tringa Temminckii* (stint); *T. cinerea* (knot), a slight variety; *Totanus calidris* (redshank); *T. ochropus*; *T. glareola*; *T. hypoleucos*; *Limosa melanura* (godwit); *Scolopax gallinago*; *Gallinula puhilla*; *Porphyrio hyacinthinus* (purple water-hen of Italy); *Podiceps minor*; *Anas rutila* (ruddy goose); *A. strepera*; *A. acuta*; *A. Penelope*; *A. querquedula*; *A. crecca*; *A. ferina*; *A. nyroca*; *Mergus merganser*. The names are from *Temminck*. Besides these, the green and spotted woodpeckers, creeper, nutcracking crow, &c., of Europe, are all represented by birds differing just enough to show them to be distinct species. I remember to have read that *Humboldt* attempted to draw what he termed *isothermal lines*, viz., lines bounding and connecting the different regions throughout the earth in which the mean temperature of the atmosphere was the same, in which, according to his theory, the natural productions would come under the same, or at least under allied genera: the birds of *Nepaul* and the *Dhoon*, as I have given them above, seem strongly corroborative of some such arrangement, though I am afraid that, like many other plausible theories, its application to Zoology would never become more than a matter of curious speculation.

“Have you ever found Montagu’s ashcoloured harrier in Cornwall? the bird described by *Selby* as the female is (according to *Strickland*, who is well acquainted with the species) a young bird: Montagu likewise describes a young male for the mature female, stating that the under parts are of an uniform colour, which is not the case, as in the female ‘every feather underneath, for a considerable space on each side the shaft, is very much darker than at the edges, so as to give

the appearance of lengthened streaks down the breast, belly and sides, but more particularly on the breast.' It is a singular character of the bird that the colour of the irides varies in different specimens, being in some deep hazel, in others very light yellow: it may, however, always be known from the common hen harrier, exclusive of the differences in the plumage, by almost entirely wanting the ruff on the neck so conspicuous in both sexes of the hen harrier when alive: the ashcoloured harrier is also much smaller. The following are the dimensions of four specimens, given by Mr. Aikins in the 'Zoological Journal':—'A male, killed June 17, weighed $9\frac{3}{4}$ oz. troy; length $17\frac{1}{2}$ inches, breadth $3\frac{1}{2}$ feet: a female, killed June 17, weighed $10\frac{1}{2}$ oz.; length $18\frac{1}{2}$ inches, breadth 3 feet $6\frac{1}{2}$ inches: a female, killed June 19, weighed $9\frac{1}{4}$ oz.; length $17\frac{1}{2}$ inches, breadth 3 feet 9 inches, length of tail $9\frac{1}{2}$ inches: a female, killed July 1, weighed $8\frac{1}{2}$ oz.; length 17 inches, breadth 3 feet 9 inches, length of tail 9 inches.' 'In the crop of the first,' says Mr. Aikins, 'were five lizards in fragments, the tails only perfect.' Strickland describes the young, from birds which were observed in the nest till full-feathered: 'Young female: head and round the eyes dirty white; crown and neck orange-brown, spotted with umber; base of feathers on the nape white; wing-coverts orange-brown, marked with umber; throat yellow-white; two middle tail-feathers umber, the rest orange-brown, barred with umber; otherwise like the young male. Young male: head, neck and upper parts umber, margins orange-brown; upper tail-covers pale hair-brown; primaries and secondaries brown-black; outer webs of the primaries tinged with gray, which is not the case in the female; tips of secondaries yellowish white; plumage in general of a lighter cast than that of the young female.' I rather think that Strickland intends to publish something on Ornithology shortly; if he does it will be something worth having, as he is one of the best ornithologists I know.

"I believe my budget of scraps is now exhausted, and I dare say you think it is quite time it should be; but I hope you will return to the attack shortly, as I shall be grateful for any information you will give me in any branch of Zoology; so in hopes of hearing soon from you,

"I remain very truly yours,
"FREDERICK HOLME."

‘*The World of Insects: a Guide to its Wonders.*’ By J. W. DOUGLAS, Secretary to the Entomological Society of London. London: Van Voorst, 1856. 245 pp. 12mo. Price 3s. 6d.

THERE is not an entomologist, from the Land’s End to John-o-Groat’s, but will read with pleasure the announcement of a book by Mr. Douglas: one and all will be influenced by a kindly feeling for the man, fully justified by antecedents: and will, furthermore, assuredly expect to find something remarkable, profound, or new, because they have perceived, whenever Mr. Douglas has put pen to paper, promises of something far beyond the average of entomological contributions to our stock of knowledge. Thus, when the curtain is drawn up on his first performance, he will behold a sea of smiling faces prepared to give him a hearty, even an enthusiastic, welcome.

Now be it known unto all men, that the “we” of a review is but an individual; and, moreover, an individual as liable to error as any other; often the mere man of straw in the *rostrum*; and therefore his *dictum*, however dogmatic, and “*dogmatism is nothing more than puppyism matured,*” is of no value, and can only receive its value in the sequel. Of course, then, the “we” of ‘*The Zoologist*,’ on this occasion, is but an individual; and he does not wish either to compromise ‘*The Zoologist*’ or to injure an author, by the unintentional misuse of a pen, intrusted on this particular occasion to his feeble hand: he has undertaken the task reluctantly, but having undertaken it “*Business must be attended to,*” as Mr. Douglas informs us, in his opening paragraph.

Well then! the book is disappointing; yes, reader! disappointing, because we had formed so high an opinion of the author’s abilities that we were sure not to be satisfied with anything that did not soar vastly above mediocrity. Just, however, in inverse proportion to the absence of the remarkable, the profound and the new, is the presence of the agreeable, the seductive, the amusing, and, to many, of the instructive.

No book could ever be more truly characterized as a compilation, but certainly no compilation ever displayed an author in a more favorable light; he is perfectly at home with every writer who has touched his subject, and passing by the technical, the vapid and the erroneous, as though he saw it not, he reproduces, with great gusto, the original, the vivid and the true. He has *Rusticus* at his

fingers' ends, and gives him a marked preference: he cites Rusticus on the apple weevil; Rusticus on the apple moth; Rusticus on the American blight; Rusticus on the gooseberry grub; Rusticus on the burying beetle; Rusticus on the tiger beetle. Side by side with these, are long extracts from Smith's admirable Catalogue of Bees, and, like the two great landscape painters, ancient and modern, lately placed in similar juxtaposition in our National Gallery, these two word-painters of insect-life, writers of the past and present generation, detract nothing from the merits of each other. But while noticing the extent of these citations, it is but justice to Mr. Douglas to say that they are always made with the most perfect fairness; chapter and verse are given with scrupulous accuracy; and the shade of Rusticus, once disturbed in its rest, by the award of a pension and a salary to the two arch pilferers of his treasures, must rejoice in finding that he has at last found a commentator and quoter who fully and honestly adopts the motto of *suum cuique*.

Let not the reader, however, for a moment apprehend that the 'World of Insects' is filled with quotations: it is not so: quotations there are in abundance, but they are connected together by the happiest interludes; they are pearls indeed, but pearls strung together on a thread of the richest gold. Mr. Douglas seems to possess a mine of wit, and that of the purest ore. Wit, or the assumption of it, is the attribute, or perhaps, the weakness of entomologists, and is most diversified in its development; the wit of one is cumbrous, reminding us of the gambols of an elephant; the wit of another is caustic and practical, developing itself in unpleasant words: the wit of another,

"like a polished razor keen,
Wounds with a touch that's scarcely felt or seen;"

but the wit of Douglas wounds not at all,—it plays around its object like the luminous, but innocuous, flash of summer lightning.

The book is divided into twelve chapters:—the House: the Garden: the Orchard and Fruit Garden: the Fields: the Hedges and Lanes: the Fences: the Heaths and Commons: the Downs: the Woods: the Waters: the Sea-Shore: the Mountains. We give a short extract from "the Garden," an extract which fairly exhibits the spirit pervading the whole.

"The garden being an artificial assemblage of certain plants within a restricted space, there to be cultivated for the sake of their foliage, flowers or fruit, it follows that all the insects attached thereto have

thus the conditions favourable to their increase proportionably multiplied and cared for. Some insects accordingly abound in gardens, not only in those attached to mansions in the country, but in those small parallelograms attached to modest suburban residences, which are ironically, or by courtesy, termed gardens, but the number of *species* found is not very great. Many garden flowers, however, are attractive to insects born and bred beyond the boundary wall, and draw them from the surrounding woods or fields: so far a garden is an advantage to a collector, for some of the visitors are rare and not otherwise to be obtained, or at least not without great trouble. I allude more particularly to the Sphingidæ,

‘Soft moths that kiss
The sweet lips of the flowers and harm not,’

hovering over them, *Petunias* especially, in some years in great abundance. I suspect that if gardens near the south-coast were attentively watched on summer evenings the number of our native species of Sphingidæ, at present very small, might be increased, and some of the rarer species of the family be more often taken than they are at present.

“Did you ever see a Sphinx fly? There is nothing to compare its motion to, except a flash of lightning. While you are looking at a flower in the twilight, between you and it glides a motion, a moving haziness, which is before you and yet conveys to your eye no definite image. Before you have half thought what it can be, you see the flower again distinctly, and rub your eyes, thinking there must have been an illusion, or possibly an unsteadiness of vision caused by the irritation of that gnat that was buzzing about your head; when, lo! the flower just beyond seems to shiver,—you move to see what is there, but there is a move before you, and a dim shadow flits away like a thought. Can it be anything real? Stand still awhile: and now, in the increasing gloom, as you bend over the *Petunias*, holding your breath, you see a darkness visible drop down before you, but its presence is better made known by the humming caused by the rapid vibration of wings. Stir not, or this aërial body will float away. Now you see it deigns not to alight or touch the margin of the chalice, but, poising itself in air, stretches out its long tubular tongue and quaffs the nectar at the bottom. Now or never, if you wish to catch it. Strike with your ring-net rapidly below the flower, raising your hand and turning your wrist at the same moment.

There you have it—*Sphinx Convolvuli*! Look, what a living glory, its eyes like stars brought down for us to look *into*, and behold, we can see nothing but light. But if you wish to see the other beauties of your captive to-morrow, you must kill it: first stop its fluttering by a pinch on the under side of the thorax, and then a dose of oxalic acid on the point of a needle will put it *hors du combat*. It has lost a little of its lustre by struggling in the net, as might have been expected, the scales on the wings of all Lepidoptera being easily rubbed off, but it is as good a specimen as is usually got in this way: perfect ones are rarely obtained, except by rearing them from the caterpillar, and such rare species as this are seldom found in their early states.”—p. 28.

Having already expressed disappointment, it would be somewhat inconsistent to wind up with the stereotyped recommendation of good-humoured critics to “rush and buy;” and yet such is our recommendation: the work truly does less than justice to the author’s position as an entomologist; it is not self-reliant enough for one who fills to admiration an arduous post in the “World of Entomologists;” but it is the very image of the author as a man; a perfect and pleasing photograph of himself: and we wait patiently for that day when the entomologist, as well as the man, shall be thus fairly pourtrayed by his own hand. In the mean time we must accept what we can get, and we can assure those who are yet on the threshold of the study that they will find our author the most agreeable of instructors.

J. G.

Synonymic List of the British Species of Philhydrida, with Notices of Localities, &c. By the Rev. HAMLET CLARK, M.A.

(Continued from page 5008).

Genus HETEROCERUS.

1. *H. marginatus*, *Fab.* This very variable insect appears to be generally distributed. Like its congeners it burrows in the mud, and may be found in these situations both in salt-water and fresh-water localities.

2. *H. obsoletus*, *Curt.* Less abundant in the North than in the London district. In profusion near Gravesend; Southend; Lincoln, on the banks of the Witham; Northampton.

3. *H. minutus*, *Dej.* Apparently more rare than either of the preceding species. Stephens gives as localities Aberystwith, Southend.

I have occasionally found the insects of this genus on the surface of, but more frequently beneath, the mud. The entomologist, when searching for them, will look out for little holes, the entrances to their burrows, and, if possible, on mud which has become firm, at least on the surface. Let him then, with his knife, peel off some of this drier surface, and examine it carefully for their mines. By following them up he will meet with the insects, if they are to be found in the locality. They seldom mine below an inch in depth from the surface.

Genus GEORYSSUS.

1. *G. pygmæus*, *Fab.* This species, the sole English representative of the family Georyssidæ, is allied to the Parnidæ and Heteroceridæ. "Southend," by Mr. Waterhouse; damp places near London; "in Suffolk and Norfolk;" and "in the Annan, near Moffat;" are the principal recorded localities.

Genus PARNUS.

1. *P. prolefericornis*, *Fab.*: Common everywhere, under rejectamenta, at the roots of wet grass.

2. *P. auriculatus*, *Illig.* I have seldom met with this distinct species. Wandsworth Common; Kimpton; Marton; Pentland Hills.

3. *P. Dumerilii*, *Latr.* So far as I am aware, this insect has not been taken for several years in England. "Banks of Wandle," "Garrett Green," "in Yorkshire," "banks of the Trent," are the recorded localities. I am indebted to Mr. Janson for my example, which was taken, many years ago, near Dorking, by Pelerin, who supplied the principal London cabinets with the species.

Genus ELMIS.

1. *E. Volkmarii*, *Panz.* This handsome, large species is not uncommon, and is widely distributed.

2. *E. variabilis*, *Leach.* Not rare in the northern counties; taken in profusion, by Dr. Power, near Wallington; North Wales; Carlisle; common in one of the deep lakes of Mull.

3. *E. lacustris*, *Steph.* Allied to, but apparently distinct from, the previous species. It is to be noticed that while *E. variabilis*, *Leach*, is taken only or principally in the northern counties, *E. lacustris*, *Steph.*, has its metropolis in the southern. I have never been so

fortunate as to meet with it myself. The recorded localities are "near Hull," "Norwich," "banks of Teviot," "Norfolk."

4. *E. æneus*, *Müll.* The most abundant of the genus.

5. *E. cupreus*, *Müll.* This and the following species are readily separated from their congeners by the absence of any thoracic longitudinal lines. From Mr. Dawson's cabinet I find that this species is to be found in profusion in the Isle of Wight. I have taken it very sparingly near Llangollen, and also in the Snowdonian district; also taken by the Rev. W. Hey in Yorkshire, and by Dr. Power in Northumberland; and, according to Stephens, "near London."

6. *E. nitens*, *Müll.* Smaller and more brassy than the last. I know but little of the habits or localities of this species. It appears to be local or rare. "Near London," *Mr. Stephens*.

7. *E. parallelipedus*, *Müll.* Readily distinguished from all congeners by its oblong form. Not common, though generally distributed. Exeter; Manchester; Scotland.

Genus SPERCHÆUS.

1. *S. emarginatus*, *Schal.* Few cabinets possess this species, considered one of the rarest of our British insects. I imagine that, like many other "rarities," it may be found in profusion, and that our ignorance respecting it proceeds, not from its being difficult to discover, but from our not searching for it in its proper habitat or season. Windsor; near York; Kensington Gardens; Yaxley Fen; have been given as localities. "Quelquefois assez commun sous la vase dessechée des fossés, ou dans les eaux stagnantes."—*Fairm.*

Genus HELEPHORUS.

1. *H. grandis*, *Illig.* Common everywhere. At once distinguishable from its size.

2. *H. nubilus*, *Fab.* Not abundant. Sandy places, Copenhagen Fields; Holme Fen.

3. *H. rugosus*, *Oliv.* Not common. Taken occasionally in abundance in spring and autumn floods.

These two species may be at once distinguished from their congeners by the carinated interstices of their elytra.

4. *H. aquaticus*, *Linn.* A most abundant species.

5. *H. griseus*, *Herbst.* Also abundant.

To point out fully the distinction between these species (4 and 5), and to unravel their tangled synonymy, requires more space than the

limits of this paper will allow: they are represented by Erichson (Kaf. d. Mark. Branden), by his *H. aquaticus*, *H. granularis*, and *H. griseus*; by Mulsant, by one species only, *H. granularis*, which single species consists of var. *A. arcuatus*, var. *B. obscurus*, var. *C. granularis*, var. *D. minutus*.

So far as a careful collation of different and well-stored cabinets of British specimens, with the descriptions of these authorities, will decide the question, it would appear that in England at least there are two, and but two, species; that is, an insect larger, darker, though most variable in size and colour,—the *H. aquaticus*, *Linn.* (= probably *H. granularis*, *Linn.*); and a species smaller, narrower, elytra always pale testaceous, and anterior and lateral margins of thorax usually pale,—*H. griseus*, *Herbst*.

In stating this as the result of long and minute investigation, I would notice the impossibility of coming to a *satisfactory* conclusion on the point in the absence of large series of specimens from each of as many *different* localities as possible. Dr. Power's cabinet contained perhaps 150 examples of these two species, and mine about 300. In a smaller series the probable absence of specimens *connecting* sets of varieties would tempt to break the group up into more species; and there would not be the same satisfactory evidence that, notwithstanding these connecting individuals, two distinct species could be established as indigenous.

6. *H. dorsalis*, *Marsh.* Rare. Hertford; Norfolk; also at Wandsworth Common, by Dr. Power. The specimens which I have examined agree as little with Stephens' description as with his figure (Illus. ii. pl. xiv. 1). The insect appears to be tolerably constant in colour; elytra dusky black, with two testaceous well-defined patches at apex, and also an irregular band of the same colour across the shoulders.

7. *H. pumilio*, *Erichs.* A distinct and beautiful species. I know of only two British examples, one in each of the cabinets of Dr. Power and Mr. Waterhouse, taken, at the same time, by Mr. Bates, of Leicester, among the *débris* of a flood; in general appearance not unlike some small specimens of *H. aquaticus*, *Linn.*, but totally distinct by well-defined markings on elytra. The *H. pumilio* of Stephens, Cab. and Man., is *H. nanus*.

8. *H. nanus*, *Sturm.* Rare. Sufficiently described by Stephens. Sturm's figure is bad. Most of the specimens I have seen were taken, twenty years ago, in the Cambridge district; Dr. Power took it not unfrequently; and in the cabinet of Mr. Babington, St. John's

College, there is a fine series, taken probably about the same date. I should be glad to learn that any of the entomologists of Cambridge had succeeded in re-discovering a locality for it.

Genus HYDROCHUS.

1. *H. elongatus*, *Schal.* Taken occasionally near London, and also in the fen districts and other localities, but nowhere abundantly.
2. *H. angustatus*, *Mull.* More common than the preceding.
3. *H. brevis*, *Herbst.* I have never met with this insect, which appears to be rare. It is found occasionally in the neighbourhood of London, and also in Norfolk.

Genus OCTHEBIUS.

I have pleasure in acknowledging the assistance that I have derived, in the examination of this genus, from Mr. Waterhouse's paper, read before the Entomological Society, April, 1853, and published in Part VII. Vol. ii. of the 'Transactions' of that Society, to which I refer your readers for distinctions between the species.

1. *O. excultus*, *Muls.* Common on moors in the North of England.
2. *O. marinus*, *Pk.* Generally distributed along the coast. In Lancashire, below high-water mark, October, 1855; also, by Dr. Power, at Sheerness, April; and Lymington, June, 1854.
3. *O. margipallens*, *Lat.* I am indebted to Dr. Power for my only examples, taken by him in mud-pits, Sheerness, April 15, 1854, in profusion; also single examples at Wandsworth and Sydenham.
4. *O. æneus*, *Waterh.* "Putney Heath, in May," is given as Stephens' locality; taken at Cowley, near Uxbridge, in tolerable abundance, by Dr. Power; also, sparingly, at Wandsworth.
5. *O. pygmæus*, *Fab.* Common everywhere.
6. *O. bicolon*, *Germ.* This insect appears to be common through France: in this country it is more rare, though generally distributed. Near London; Norfolk; Suffolk; W. England; Scotland.
7. *O. rufo-marginatus*, *Steph.* Near London, and Netley, are Stephens' localities. Birch Wood, July, 1855; near Wallington, Northumberland, August, 1855, by Dr. Power. I have never met with this species.
8. *O. æratus*, *Steph.* Not uncommon.
9. *O. exaratus*, *Muls.* The only locality for this species, so far as I know, is Gravesend, a ditch between the town and fort, where it was taken very sparingly by G. R. Waterhouse, Esq.

Genus AMPHIBOLUS.

1. *A. atricapillus*, *Waterh.* I introduce this species with some hesitation. It is based upon a single example in the cabinet of Mr. Davis, described by Mr. Waterhouse in Ent. Mag. vol. i. There is some reason to fear that this single example is lost. Its reputed locality was Hebden Bridge.

Genus HYDRÆNA.

1. *H. testacea*, *Curt.* Battersea Fields; near Epping; Halifax. I do not know of any *recent* examples of this species: it exists in several of the old cabinets.

2. *H. riparia*, *Kug.* One of the largest species of the genus. I have taken it occasionally in Wales. Probably to be found more frequently near London.

3. *H. nigrita*, *Germ.* Four examples near Bettys-y-Coed, September, 1855; Dr. Power found it also in Northumberland.

4. *H. gracilis*, *Germ.* Among the *northern* representatives of this genus probably the most abundant. I have taken *many thousands* in the mountain rills of North Wales; the Rev. W. Hey found it in profusion in Yorkshire.

5. *H. flavipes*, *Stur.* I have never met with this beautiful little species, but am indebted to Dr. Power for the examples in my cabinet, taken by him in the Wansbeck, near Wallington.

6. *H. pygmæa*, *Waterh.* I found this species sparingly in North Wales. Taken, according to Stephens, near London.

The sexual dilatation of the palpi of this and the preceding species deserves attention. I do not discover that the same obtains in any of the former species of the genus. A single example of *Hydræna* in Mr. Waterhouse's cabinet will probably prove to be a seventh species.

Before I leave this genus let me give one word of suggestion to your readers who desire to obtain examples for themselves: PATIENCE. There may be in the net one hundred examples, all, without a special exercise of this entomological virtue, to be thrown aside with the *débris*. First of all separate (with the net *in the water*), as far as possible, all leaves, sticks, &c., by washing; then spread out carefully the remainder, and *watch*.

Genus LIMNEBIUS.

1. *L. truncatellus*, *Thunb.* There seem, by general consent of entomologists, to be two distinct sizes of this insect, which is not uncommon.

2. *L. lutosus*, *Marsh.* Mr. Hey has taken this species near York; I have also received it from Orkney; "near London," *Stephens.*

3. *L. nitidus*, *Marsh.* I took this sparingly in Holme Fen, May, 1853; near London.

4. *L. picinus*, *Marsh.* Horning Fen, 1854; also near London.

Genus BEROSUS.

1. *B. spinosus*, *Ahr.* Not uncommon in the salt-marshes near Lymington.

2. *B. luridus*, *Linn.* In profusion at Southend, May, 1853. Common.

3. *B. aericeps*, *Curt.* Not a rare insect, though I have never met with it.

4. *B. globosus*, *Curt.*

Genus HYDROPHILUS.

1. *H. piceus*, *Linn.*

Genus HYDROUS.

1. *H. caraboides*, *Linn.*

Genus HYDROBIUS.

1. *H. oblongus*, *Herbst.* Though Whittlesea Mere is given by Mr. Stephens as a locality for this insect, I have never met with it in any of the fens. Common at Southend; Sheppy; Gravesend.

2. *H. fuscipes*, *Linn.* Common.

3. *H. bicolor*, *Payk.*

4. *H. globulus*, *Payk.*

5. *H. aeneus*, *Germ.* The only species of the genus apparently rare. I have never been able to meet with it.

Genus LACCOBIUS.

1. *L. minutus*, *Linn.*

2. *L. bipustulatus*, *Marsh.*

The number of species which Stephens has attempted to form from

this genus sufficiently proves the variableness of the insects. I believe that any ordinary series of examples in our cabinets will contain individuals connecting together his species, and that the genus will stand as above.

Genus PHILHYDRUS.

1. *P. lividus, Forst.*
2. *P. melanocephalus, Oliv.*
3. *P. marginellus, Fab.* All of these insects are tolerably abundant.

Genus CHÆTARTHRIA.

1. *C. seminulum, Payk.* Certainly rare. Stephens gives as localities Norfolk, Suffolk, Wimbleton Common.

Genus CYCLONOTUM.

1. *C. orbiculare, Fab.* Common, at roots of herbage, in damp localities; under planks, &c.

Genus SPHÆRIDIUM.

1. *S. Scarabæoides, Linn.*
2. *S. bipustulatum, Fab.*

Although the *habits* of this and the following genera, comprising the Geophilidæ of Mulsant, are totally different from those of the insects which we have been considering, I introduce them here, as completing the group Palpicornes. I intentionally *omit*, with regard to this group of insects, notices of *localities*: the species have up to the present time been so little examined that any such notices would probably rather mislead than direct. I rejoice to remember that *now* entomologists think the group not unworthy of attention; so that we may hope to obtain some accurate knowledge of the respective range of each species throughout our islands. The *specific distinctions* of these insects have been very carefully studied by Mr. Murray and Mr. Waterhouse. The former has published in the 'Annals of Natural History' a valuable paper, pointing out their relative differences of structure (Vol. xii. No. 68, Aug. 1853); and Mr. Waterhouse has kindly furnished me with a complete and carefully drawn up MS. list of their synonymy, as adopted by the principal authors of the Continent and Great Britain.

Genus CERCYON.

1. C. obsoletum, *Gyll.*
2. C. Hæmorrhoidale, *Fab.*
3. C. hæmorrhoum, *Gyll.*
4. C. laterale, *Marsh.*
5. C. unipunctatum, *Linn.*
6. C. quisquilium, *Linn.*
7. C. terminatum, *Marsh.*
8. C. nigriceps, *Marsh.*
9. C. pygmæum, *Ill.*
10. C. littorale, *Gyll.*
11. C. depresso, *Steph.*
12. C. aquaticum, *Muls.*
13. C. melanocephalum, *Linn.*
14. C. lugubre, *Payk.*
15. C. flavipes, *Fab.*
16. C. minutum, *Fab.*
17. C. anale, *Payk.*

Genus MEGASTERNUM.

1. M. obscurum, *Marsh.*

Genus CRYPTOPLEURUM.

1. C. atomarium, *Fab.*



I will only add, in conclusion, that, if there are any of the younger readers of the 'Zoologist' or others who are desirous of examining these interesting families, but feel at a loss in regard to nomenclature, I shall have pleasure in giving them any assistance in my power; and if they will entrust me with examples I will return them with their proper names. The only stipulations that I would make are that their boxes by post should be wrapped in wool and *tied up with string*, as well as sealed or fastened with paste; and that the specimens which they contain should be *fairly mounted*.

HAMLET CLARK.

Northampton, February 25, 1856.



Remarkable Act in a Fox.—A short time since, on a Sunday evening, a farmer living in the parish of Lansallos, in the County of Cornwall, left his home with his family to attend the religious services of a chapel in the neighbourhood, and omitted to fasten his ducks in their usual place of safety, a circumstance which a fox from the neighbouring cliff did not fail to take advantage of, by appropriating seven of them to his own purposes. No other traces of them could be discovered, besides some scattered feathers, until the following Friday, when some were found in a neighbouring field, dead, and carefully covered over with earth and leaves. Of another of those unfortunate ducks, however, the case was singular. The poor bird was found buried in the earth, all but its head, which showed some signs of life. It was, therefore, dug up carefully; and by the tender nursing of the farmer's daughters, who fed it with milk, it was restored to health and strength. After the double escape, first from the jaws of a fox, to which its companions had fallen victims, and afterwards from premature interment, the kind-hearted farmer declares that this, after all, fortunate duck, shall be suffered to live on to the full extent of its natural life.—*Jonathan Couch; February, 1856.*

Deer feeding on Horse-chestnuts.—As some excuse for ignorance of what appears to be a well-known fact, I may plead that I never in my whole life, now verging toward man's usual term, resided in the vicinity of a deer park, and in the casual passing by or through such places the opportunities of observation are very limited. In Bell's 'British Quadrupeds' I find no allusion to the food of deer, whether red or fallow. With regard to Mr. Bree's question, "Is the origin of the name *horse-chestnut* correct? and will our English horses eat the nuts?" (Zool. 4993), I can only reply, that having seen the statement in print somewhere I quoted it as in the 'Zoologist,' 4913, but intentionally as a *rumour* merely until substantiated by evidence. My own opinion of the origin of the name "*horse-chestnut*" has always agreed with Mr. Bree's. I may, however, add that in Vol. xii. of 'Notes and Queries,' p. 407, it is asked "Why is a horse-chestnut tree called a horse-chestnut tree?" To which is appended the editorial answer, that it "is so called from the similitude of the fruit to that of the chestnut, and *from its being given to horses.*" To the last clause of this sentence, which I have emphasised, I would reply in the words of Touchstone to Corin ('As you Like it,' Act 1, Scene 2), "Instance briefly; come instance."—*Arthur Hussey; Rottingdean, February, 1856.*

Origin of the name Horse-chestnut.—The question has been twice mooted of late, in the pages of the 'Zoologist' (Zool. 4913 and 4993), whether the term "*horse-chestnut*" is derived from the partiality supposed to be evinced by horses for the fruit of that tree. May I be allowed to express my conviction that the opinion of your last correspondent (Mr. Bree) is the correct one, and that it is so called from the coarseness of the fruit in comparison with its congeners. The prefix of the word "*horse*," intended to express size, is exceedingly common in our language: thus a loud boisterous laugh is denominated a "*horse laugh*;" the large coarse species of leech is called the "*horse leech*;" a strong pungent root is called the "*horse radish*," &c. So in like manner, and with the same signification, we find the word "*bull*" prefixed to many words denoting size, coarseness, bulk, as "*bull-rush*," "*bull-finch*," "*bull-frog*," &c. Thus again "*cob*" is frequently used as a distinctive mark of bulk: "*cob-loaf*" was the largest loaf of the batch; "*cob-apples*," "*cob-nuts*," &c., were respectively the largest apples, nuts, &c., of the crop; "*cob-coals*" were large pit coals; "*cob-stones*," large stones; a "*cob-swan*" was simply a swan of the largest

size; and Mr. Yarrell tells us that the great blackbacked gull was originally called a "cob," as it is now in some districts, for the same reason: while everybody knows that this is the common denomination of a stout strong pony. Nor is ours the only language which uses such a prefix with this signification: "capercaille" is no other, in Gaelic, than the "horse of the wood," while its Latin specific name, *urogallus*, "wild-bull cock," likewise refers to the size of the species (see Yarrell *in loco*); and many other instances might be given. I append, in support of the above opinion, the following passage from Sir Thomas Brown ('Vulgar Errors,' Book ii. chap. vii.):—"And so are they deceived in the name of horse-raddish, horse mint, bull rush and many more, conceiving therein some prenominal consideration, whereas indeed that expression is a Grecism; by the prefix of *hippos* and *bous*, that is *horse* and *bull*, intending no more than great." But indeed the whole question of nomenclature is of exceeding interest, and often full of information, if we would dive into the origin of names; and I should be delighted to see in the pages of the 'Zoologist' some inquiry into this point, the meaning of some of the names we so commonly use, and the appearance or the habits of the animal which such names are intended to pourtray. Had I leisure to pursue this subject as it deserves I would gladly devote some time to it, and jot down a few notes on the point, but I must leave it to abler and better pens. Meanwhile, by way of starting the topic and provoking discussion upon it (if possible), I would ask a question that puzzles me much: how comes it that the word "jack," so generally used as a diminutive (*e. g.* when applied to the smaller snipe, and the smaller curlew—meaning the whimbrel), should change its office, and imply bulk and magnitude when applied to the fish pike? That it does so is sufficiently notorious to every one, but I will adduce as an undoubted authority 'The Spectator' (No. 108, *passim*).—Alfred Charles Smith; Yatesbury Rectory, Calne, February 8, 1856.

Black Hare at Epping.—A perfectly black hare was shot on the estate of Sir B. Smyjth, M.P., Hill Hall, near Epping, Essex, 31st January, 1856, by Mr. West.—James Cooper; London, February, 1856.

Occurrence of the Peregrine Falcon near Norwich.—After dinner on the 26th of December, 1855, I was somewhat astonished to see a relative of "mine host" coming to the window of the room in which I sat, holding up for my notice a beautiful male peregrine falcon, which he had just shot in a field not 100 yards from the farm-house in which I was spending my Christmas: it was at Mr. Q. Cubitt's, Neatishead, near Norwich, Norfolk. I was presented with the bird, which Mr. Argent has preserved for me, and it is one of which I am not a little proud.—M. C. Cooke; Trinity Schools, Lambeth, January 25, 1856.

Honey Buzzard breeding in Hampshire.—During a recent visit to a place on the borders of Hampshire and Wiltshire, a few miles from Romsey, I was fortunate enough to find in the possession of a farmer, who is also a bird-stuffer, a fine specimen of the female honey buzzard (*Falco apivorus*), and two young in the down: these he had stuffed. They were taken in a copse close to his house, in the summer of 1852, when the birds nested: the male was shot at, but escaped. The man called them common buzzards, and would not be persuaded of his mistake. "In the nest," he

said, "there were no other eggs or young." The adult bird is of a beautiful purple-brown all over, no white appearing anywhere; the tail is slightly barred with two shades of brown: one of the young is more advanced than the other; the quill-feathers just show in one, and not in the other. As it is rare to find this buzzard's nest, I have sent this little notice. Can any readers of the 'Zoologist' give me any more authentic instances of the breeding of the honey buzzard in this country than the following, viz., 1st and 2nd, Cases mentioned by Willughby and Pennant, without giving places or dates. 3rd, In the summer of 1780, in Selborne Hanger, mentioned by White in his 'Natural History of Selborne.' 4th, In the woods of Abergeldie, in Aberdeenshire, mentioned by Mr. Macgillivray in his work on 'British Birds,' Vol. iii. p. 261. 5th, In July, 1838, at Wellgrove Wood, Henley-on-Thames, when two eggs and both old birds were procured (Zool. 437). 6th, In June, 1841, two birds were shot in Waverley Wood, near Stoneleigh Abbey, and the nest was seen: communicated by a game-keeper of Lord Leigh's, who also said that he had previously shot another pair, which he considered had a nest: from a paper of Mr. J. P. Wilmot, (Zool. 437). 7th, In August, 1841, two young males were shot from the nest on the estate of J. Atkinson, Esq., near Hexham. And the case I have noted as occurring in 1852 at Earldom's Copse, near the New Forest, when the male bird and two young were taken; now in my possession.—*Alfred F. Sealy; 70, Trumpington Street, Cambridge, February 8, 1856.*

Note on the Hawfinch (Loxia coccothraustes).—In February, 1855, an individual of this species was taken at Guestwick, without injury, in a trap baited with haws, when the snow was some inches deep. It has since that time been kept in captivity: at first it was exceedingly wild, and still remains very shy, showing no sign of attachment or recognition for the daily kindness exercised towards it in order to win its affections. It feeds principally upon hemp-seed, but if kept exclusively upon it the fine flesh-colour of the bill is changed to a leaden hue, but which disappears when the diet is varied with the fruit of the honeysuckle, mountain ash, yew, Cotoneaster and the Crataegi, of which the kernels only are appropriated, the pulp being invariably rejected. It refuses berries which have no kernels, such as the Viburnum, and will eat but very sparingly of wheat and canary seed. It is an adult male; it did not complete its winter dress until the latter end of October; it displays none of that uneasiness characteristic of birds of passage in confinement at the seasons of migration; it utters no song, but occasionally, when all is still and the day bright, it warbles in a very modest key a few consecutive and by no means unpleasant notes. In July a nestling female greenfinch was introduced, in the hope that its society and extreme tameness might comfort and civilize the stranger, but her lord refused in the most un courteous manner to acknowledge her presence, by considering her person a part of his perch, without, however, any malignant display of ill will. The greenfinch has since arrived at "years of discretion," fully asserts her rights, and, if the rule of the Pritchard family holds good with them, "They nor care have, nor pain, for the wife wears the breeches." If the hand is put near him he retreats, backing himself against the side of the cage, somewhat after the manner of the kestrel, and if taken will often produce a very painful wound with his sharp and powerful mandibles, uttering a harsh grating note, resembling the syllable "twert" repeated in rapid succession with a nasal accentuation (perhaps indicative rather of American than French or German extraction). I have taken *Heliothis marginata* and *Ptilophora plumigera* in this neighbourhood.—*R. Drane; Guestwick, Norfolk, February, 1856.*

Migration of the Swallow Tribe.—1852. July 27. A fine calm evening: observed some forty or fifty swifts (the first I had seen for some months) flying very low, and after sweeping round the house for a few minutes, rose almost perpendicularly to an immense height, so as to appear mere specks in the distance.

1852. September 24, 9 a. m. Remarked that some hundreds of swallows had collected on the roofs of the houses situated on the edge of the cliffs, where I have observed they annually assemble in considerable numbers before taking their final departure: some were clinging to the walls, others creeping under the eaves, and then rising altogether they would wheel round the buildings, and settle down again to sun themselves after the heavy dew of the previous night.

„ November 4. Had several swallows about the cottage: they would occasionally alight on a twig or a bramble in the garden hedge, which frequently proving too weak and slender to support them, it was amusing to observe the very awkward manner in which they endeavoured to keep their footing and preserve their equilibrium, but when they did succeed they appeared to enjoy the warmth of the sun, after the rainy and tempestuous weather to which they had been exposed.

„ November 12. Black Martin.—Was greatly surprised at seeing one of these rare birds in company with several common ones. I endeavoured to shoot it, but failed in doing so, the garden being surrounded by houses. 14th, Again observed the black martin between this and Bonchurch.

1853. September 17, 8 a. m. Observed that several hundreds of swallows had assembled on the houses near the cliffs, not only the roofs of which were covered, but the chimneys too: they had also settled in great numbers on some scaffolding fixed to one of the houses.

1854. September 7. Remarked this morning a great number of sand martins: first noticed them on the 5th, and again on the 6th; they were all arriving from the westward, in small detached parties of from fifteen to twenty; their flight, although rapid, was wavering and irregular, not unlike that of a butterfly. They were flying against the wind, which had been blowing from the eastward for a week or more: shot one, which proved by its variegated and beautiful plumage to be a young bird: I believe they are now migrating, and beating up against the wind to gain the narrowest part of the Channel for crossing.

„ November. Saw several martins flying on to the roof of a house near my garden-gate, where they frequently resort towards evening to roost in the holes about the eaves: they were so tame, or fatigued, that some boys who were endeavouring to knock them down with long sticks failed to scare them away.

1855. September 10, 9 a. m. Saw innumerable swallows and martins: there were also some sand martins, all the latter seemingly coming from the westward. About ten o'clock a great number of swallows assembled on the roofs and chimneys of the houses on the cliffs, near the sea (their usual resort), which is about the most southern point of the island. I am inclined to think, from their manner of flying, as well as from their general appearance, that they are mostly young birds, those shot by me late of a season having generally proved to be so.

One autumn (a year or two since, at $\frac{1}{2}$ -past 7, a. m.), there were, as I was informed by my sons, hundreds of swallows seen by them at the above hour on the houses on the cliffs: they were so numerous and so fatigued that they flocked to and settled on a pole, which had been thrust out of one of the windows by a boy living in the house, who was amusing himself by occasionally shaking them off, which brought some of the

weakest nearly to the ground. After resting for about an hour, or more, they again took wing, directing their flight to the eastward. This again strengthens my conviction and assertion, that swallows in their migration do not cross the channel to the westward of this island, and I can trace them as far east as Gosport, in which neighbourhood they were seen about three years since, by a near relation of mine, settling by thousands on the telegraph wires: those seen here by my sons at such an early hour in the morning, must evidently have been on the wing during the night, or a great part of it, or they would not have been in such an exhausted state on their arrival. Notwithstanding the early arrival of swallows last year, viz., on the 8th of April, it was one of the latest and coldest seasons I ever remember to have experienced in the Undercliff, and, so far as my own observations have enabled me to judge, their arrival is not to be explained or accounted for by sudden or temporary changes of temperature, nor even by a succession of mild or fine days, but is regulated by the forwardness or lateness of the springs in the regions to which they resort during winter; and when the increasing power of the sun invites them to migrate northwards, they come, I have reason to believe, in small detachments, and proceed immediately inland for both food and shelter; for it would be unreasonable to suppose that, at that early period of the year, either flies or gnats would be found on the coast sufficiently abundant to supply their wants. For instance, on the 22nd of April, 1852, I had only seen a few stragglers in this neighbourhood, but on riding on to Newport I saw a great number hawking over a pond in a very sheltered situation near the town, which is almost surrounded by hills. Although swallows are endowed with an instinct that strikes one with wonder and admiration, it would be absurd to suppose that their instinct can point out, or make known to them, the state of the temperature or the changes of climate in a different quarter of the globe, and from which they are separated by two seas and a continent. This, I think, sufficiently accounts for the uncertainty attending their arrival. Last season they delayed their departure unusually late. On the 11th November I saw hundreds of swallows and a few martins: they still lingered, and seemed loath to quit this happy valley, where all was still sunshine, and where their insect-food appeared still abundant; and the day was so mild and lovely, that to see them darting past, their glossy and beautiful plumage sparkling in the sun, it would have required no great stretch of the imagination to have fancied that it was a genial April, not a November day: but halcyon days were transient, and so these proved; a sudden change, so sudden as to be even remarkable in our most changeable of climates, burst upon us on the 14th, and at once dispersed this happy group, leaving only a scared straggler or two, where three short days before they were to be seen in countless numbers.—*H. W. Hudfield; High Cliff, Ventnor, Isle of Wight; February 13, 1856.*

Note on the Common Dipper (Cinclus aquaticus) near Norwich—One of these very accidental visitors to this county was shot on the 20th of this month, near the ferry adjoining the Cathedral Close. A specimen, now in the Norwich Museum, was obtained some few years since near Hellesdon Mills; but rare as the water ouzel is in this district, it is still more remarkable to meet with it almost within the walls of a city, where the river, thick and discoloured by the neighbouring factories, contrasts so strangely with the clear running streams of the North, the favourite haunt of the dipper.—*H. Stevenson; Norwich, November 25, 1855.*

Further Particulars of the occurrence of the Great Bustard near Hungerford.—I trust it will not seem presumptuous in me to attempt to add a few particulars which I

have gleaned with reference to the great bustard whose capture was recorded in the 'Zoologist' for February (Zool. 4995), though that capture was described by no less a master in Ornithology than Mr. Yarrell. Did it refer to any inferior bird, and had not certain opinions gone abroad that it was a tame one escaped from confinement, I should leave the matter as it is ; but as I am sure that every circumstance, however minute, connected with the occurrence of so noble, so rare and so highly prized a visitant, will be deeply interesting to all my brother ornithologists, and as, residing not very far from the scene of its appearance, I have been enabled to prosecute very diligent inquiries amongst all those who either saw the bird or had anything to do with it, I shall without further apology proceed to answer what seems to me to be an unfounded report, and to state the few additional facts of its occurrence which have come to my knowledge (first premising that I should have done so a month since had I not for a time become entangled in a web of falsehoods, which some of those near the place of the capture thought fit to weave when they discovered how notorious a visitor they had had, every one seeming desirous of proving that he saw, if he did not help to capture, the bird ; such reports, however, having been diligently sifted, turned out for the most part to be gossip). It has been asserted very positively, by several persons who have examined the bird since it has been in Mr. Leadbeater's hands, that it bears unmistakeable marks of confinement, especially as regards the draggled appearance of the wings and tail ; and I fancy this opinion is not a little confirmed by the mysterious broken leg, no very satisfactory cause for which they have discovered ; but now let me beg attention to a plain statement of the *facts* of the case. It appears that at the beginning of January (which is the nearest date at which I can arrive) one of Lord Ailesbury's keepers, named King, saw a large bird flying over Henswood, part of Marlborough forest : it was quite alone, and thinking it might be an "eagle" he fired a cartridge at it, though he thought it beyond his reach : as the bird continued its flight, apparently unharmed, he did not suppose he had touched it, but went on his way, thinking no more of the matter. I cannot learn as a positive fact that anything more was seen of a large bird for some days, though there are a great many fables on the subject. And now we come to the time when Mr. Yarrell begins his account, how a little boy found a great bird (proving to be an undoubted great bustard) fluttering on the ground, with its left leg broken ; how, notwithstanding its struggles with beak and wings, he succeeded in seizing it by one wing, and so dragged it along the ground for nearly a quarter of a mile to the farm, where its neck was broken by a labourer ; and how the boy affirmed that the bird was quite clean when he first saw it, but that he made it dirty by dragging it along the field. Now, putting all these circumstances together,—the keeper firing a cartridge at a large bird ; the subsequent capture, by a little boy of tender age, of a large powerful and savage bustard, with a broken leg, but with very slight resistance comparatively on its part : taking into account, too, how the wound in the leg of the captured bird appeared to be a stale one, of some days standing ; how the limb was not shattered, as if by shot, but the bone broken off, as if by ball (as was the conjecture of some who subsequently saw it), and that "too high up to have been caused by a trap,"—may we not reasonably conclude that the bird seen by the keeper was one and the same with that captured by the boy, and that the keeper's cartridge took effect and crippled it, and so rendered it by loss of blood weak and exhausted, and an easy prey to its youthful captor ? I confess I can come to no other conclusion, and therefore Henswood (the scene of the keeper's shot) being in Wilts, I lay claim to this bustard as a Wiltshire specimen as well, though I own it

was so misguided as to cross the border to die in another county; but Wiltshire was always a great stronghold of these noble birds, and the subject of these remarks doubtless came to visit the retreats of his forefathers, though I must acknowledge the reception he met with was neither friendly nor encouraging. Again, from the above premises,—the dragging of the fluttering bird along the ground for a quarter of a mile, in the first week in January, when fallows and arable lands of all kinds are proverbially wet and muddy, and the declaration of the boy that until so dragged its plumage was quite clean,—have we not a very obvious cause of its injured feathers, a very plain straightforward conclusion, and an ample answer to those who judge of its previous confinement from the draggled appearance of the wings and tail? and this in addition to the great improbability (if it had escaped from confinement) that so valuable a bird should neither have been claimed, identified, nor even mentioned by its previous owner; while the fact of its occurrence has been widely and generally made known by the 'Zoologist,' the 'Times,' and the 'Illustrated London News,' in addition to several provincial papers. The bird is now immortalized by Mr. Leadbeater, and in the possession of Mr. Rowland, but it was within an ace of being lost to Ornithology for ever, as at the barn, the scene of its barbarous murder, a council of war was held over it by all the labourers, who were at that hour assembled at dinner, and it was very nearly decided to pick and dress it then and there; but the little boy's brother claimed it for him, and so it was put on his back, and its head was held in his hand, and so he trudged home with his prize to his mother; and no wonder that the urchin said "it was main heavy, and he could n't scarce get along with him," for though described to be in poor condition it weighed $13\frac{1}{2}$ lbs., and measured 6 feet 3 inches from tip to tip of the wings. Mr. Rowland further remarks, and very justly, that the only way to account for so small a boy so easily capturing a bird as large as himself is that when he caught hold of the *left* wing the bird became powerless, in consequence of the leg on that side being broken, and that when once on its side it could not recover itself to offer resistance. But one more fact have I to offer, and that is the name of the farm which was the scene of the death of the last of the bustards; and that, harmonizing well with the emaciated condition of the bird, rejoices in the euphonious title of "Starve-all."—*Alfred Charles Smith; Yatesbury Rectory, Calne, March 6, 1856.*

Occurrence of the Great Bustard (Otis tarda) in Cambridgeshire.—About Christmas, during the last winter, a pair of the great bustards were seen by the fen-men in Wicken and Burwell fens: very soon after Christmas they were shot at, and one was supposed to be wounded; any how after this, only one bird was seen. This bird was noticed by all the people living near or on the fen with whom I have spoken, but partly from the little intercourse between Wicken and Cambridge, and partly, perhaps, from a desire to prevent others from sharing the chance of securing so rare a prize (for the bird has not been seen for more than twenty years in those parts), the news did not reach the collectors in Cambridge until the 1st of March. Several went down immediately, but all of us were equally unsuccessful, as the last time it was seen was on Sunday, March 2nd, when some of the fen-men shot at it, but being too far to have a chance of killing it, they only frightened the bird off, and at present no further tidings of it have been heard. In a piece of cole-seed, which it often was seen to frequent, were found marks of the scratching of a large bird and several feathers, some from the wing, others being the short feathers of the back: from the brightness of the markings of these feathers, the bird must have been a very finely marked specimen. There is such difficulty in extracting true information from the fen-men, that I could

not find out the man who fired at the two birds, but several persons concur in stating that it was soon after Christmas. Is it not probable that this might be the same bird which was discovered wounded near Hungerford, on January 3rd, mentioned in the 'Zoologist' for February.—*Alfred F. Sealy; 70, Trumpington Street, Cambridge, March 17, 1856.*

Occurrence of the Bittern in Bedfordshire.—A bittern was shot at Lawrence End, near Luton, Beds, in a plantation, by Mr. Croft, January, 1856; another in January, by C. Morgan, Esq., in Glamorganshire.

Note on the Bittern (Ardea stellaris) in Devonshire.—The bittern, unlike many other species once common in Devonshire, has become of late years from a rare bird a regular winter visitor to this county, and has been unusually abundant this season. The following is a list of those which have come under my own observation during the last four years, but I have seen notices in the local papers of many others which have been shot in this and the surrounding counties:—

- 1853. December 15th, one shot on the mud near turf, on the Exe.
- 1854. January, one shot near Collumpton.
- " November 27th, one shot in the Clyst marshes.
- 1855. February 3rd, one shot on the Exe, near this house.
- " December 11th, one shot in the Clyst marshes.
- " December 22nd, one shot by myself, on the Exe.
- " December 26th, one seen several times about this place.
- 1856. January 22nd, two killed on Slapton Lea.
- " January 23rd, one killed on Slapton Lea.

They appear to be met with either during or after the prevalence of high easterly winds and cold weather, and are usually not at all shy, allowing of close approach before taking to wing. The specimen I killed on the 22nd of December rose within a few yards of me, from the rushes on the "leek-beds" (as they are called), when I was looking for snipe, and had probably only arrived the preceding night, as, though in tolerably good condition, its stomach was quite empty. That seen on the 26th of December was first observed from the windows on the grass lawn close to the house, and was afterwards seen several times about our wood and the opposite side of the river. The three killed at Slapton, on the 22nd and 23rd of January, were shot by a party shooting on the Lea, where I believe it has hitherto been a bird of rare occurrence.—*W. S. M. D'Urban; Newport, near Exeter, February 5, 1856.*

Note on the Spotted Crake (Crex Porzana).—A fine specimen of this most beautiful and elegant bird was captured on October 25th, 1855, by a neighbour (in his garden, situated on the edge of the cliffs, close to the sea), who sent it for my inspection. There had been a strong gale all the morning from the eastward, which had probably delayed its departure. Considering that if released, it might possibly be recaptured, I determined on trying to tame it, but after keeping it in confinement for about a week (during which period it usually fed well), it was found dead in its cage. Although usually quiet enough during the day, after dark it invariably became very restless, endeavouring most perseveringly to thrust its head between the bars, and would continue perambulating its cage till about midnight, when my observations ceased. I infer from this unquietness and great anxiety to effect its escape after dark, that, like the snipe, woodcock, and other species (probably the swallow), it migrates by night. Although somewhat small, its great—indeed almost perfect—resemblance in form to the common corn crake must strike even the least careful observer.—*H. W. Hadfield; High Cliff, Ventnor, Isle of Wight, March 7, 1856.*

Occurrence of the Sclavonian Grebe (Podiceps cornutus) in Devonshire.—On the 22nd of January last I visited that most interesting locality for an ornithologist, Slapton Lea, near Dartmouth, and saw a specimen of the dusky or Sclavonian grebe, which had been shot on the Lea on the previous day.—*W. S. M. D'Urban; Newport, near Exeter, February 5, 1856.*

Occurrence of the Little Gull and Common Skua on the Exe.—On the 28th of December last, the man Hall, who killed the avocet in September (Zool. 4895), shot a specimen of the little gull (*Larus minutus*), and the next day an immature example of the common skua (*Lestrinae catarractes*), which had just struck down and was making a meal off a blackheaded gull, and was so intently occupied on it as to allow him to approach quite close before he fired. Both birds were killed on the Exe, below Topsham, and are very rare on this river.—*Id.*

Occurrence of the Storm Petrel (Thalassidroma pelagica) at Newmarket and near Cambridge.—A fine specimen of the storm petrel was picked up in the street of Newmarket, in a very exhausted state, on the 2nd of November; and on the following day another was found dead at Bottisham, near Cambridge: they are now in the possession of Mr. Savell, naturalist, Cambridge.—*A. Fuller; St. John's College, Cambridge, February, 1856.*

Another supposed New Flounder.—I beg to hand you some account of a flounder which has lately come under my notice, it having been taken out of the stomach of a cod.

Extreme length $2\frac{3}{4}$ inches.

“ breadth, fin rays included, $1\frac{1}{2}$ inch.

Length of caudal rays, $\frac{5}{8}$ ths of an inch.

“ pectorals, $\frac{3}{8}$ ths of an inch.

“ head, rather more than $\frac{1}{4}$ of an inch.

The dorsal commences in advance of the upper eye, and runs down until it nearly reaches the caudal: ventrals very small: the anal, which begins exactly below the gill-cover, and has the appearance of being joined to the ventral, ends posteriorly in the same manner as the dorsal: all the fins are ragged, and partially denuded of membrane: the eyes are even; I cannot find that either is in advance of the other; they seem to be of three colours, first a dark blue, then brown, and the centre or pupil deep black: the scales, a few only of which remain, are not large, and appear to have been very deciduous: lateral line straight: mouth armed in both jaws with numerous sharp-pointed teeth: eyes, &c., on the left side. The upper side is of a pale flesh-colour mixed with horn-colour; the under side is unfortunately gone, but seems to have been whitish: the thickness is about that of four common wafers, and it is almost transparent. At regular distances, on the extreme edge of the dorsal and anal fins, are seven black spots, very conspicuous when fresh, and distinctly visible now the fish is dried. Now what is this fluke? a variety of *Rhombus arnoglossus*? or a specimen of *R. candidissimus* of Risso? or a new species? I have never seen a specimen of *Pleuronectes diaphanus*, which is synonymous with *R. candidissimus*, but from what I have heard I think it comes nearest to that species. In case it proves that species it

will be an acquisition to our seas. I have now seen three specimens, the seven black spots present in all. I possess a specimen of *Rhombus arnoglossus*, also taken from a cod's stomach, but I cannot satisfy myself that it is that species.—*Thomas Edward* ; 16, *High Street, Banff*.

Occurrence of Atypus Sulzeri in Britain.—As you, I see, read a paper on *Atypus* at a meeting of the Linnean Society, may I inform you that when I was in London, in October last, I detected, in one of the store boxes of Foxcroft, three examples of this spider, one of which I sent to Mr. Blackwall and the others I reserved for Mr. Meade. The locality (from the information he gave me of it) is somewhat doubtful; he got them from a friend, I understood him to say in Cumberland: the species was taken apart from any webs, having, I supposed, habits of *Lycosa* or *Salticus*. It is very curious that such a rare and almost unknown species should have been discovered twice, at about the same time.—*Hamlet Clark* ; *Northampton, March 15, 1856.*

Note on Atypus Sulzeri.—Although no arachnologist, I have read with much interest the note by Mr. Newman on *Atypus Sulzeri* of Latreille (Zool. 5021). One of the authorities quoted, and referred to therein, observes, in his remarks on the nests or tubular cells, “They are composed of very fine silk, closely woven throughout, white or whitish within, and covered exteriorly with yellowish or brownish particles of sand, which give the tube a dirty appearance externally, but inside they are always neat and clean.” Is it then probable—nay, more, is it possible—that each time the inmate captures a worm (on which it is supposed to feed) it should break through the walls of its tubular residence, which is described by Walckenaer as being very close, fine and white, resembling the cocoons of some Lepidoptera? Mr. Newman’s correspondent also remarks, “In that portion which is exposed and is distended more than the rest, I sometimes discovered one or more minute openings, protected or covered by a little valve or door.” Having commenced these observations by saying that I am not conversant with Arachnology, I of course approach the subject with some diffidence; but after a careful perusal of the note I am inclined to think that the *Atypus* does not obtain worms in the manner suggested, for, if so, would not the “brownish particles of sand found exteriorly” fall through and soil the white carpet-like lining? to say nothing of the “neat” cell being periodically—perhaps daily—converted into what might be called a slaughter-house. And what cleansing, what sweeping together of fragments after each repast would be required! to say nothing of the labour of repairing the breach (an ever-recurring task) in the walls of this “closely woven cell.” In the second place, is it not more natural to suppose that the *Atypus* should by night, if not by day, let itself out where there are “minute openings, protected or covered by a little valve or door.” If any elasticity exists in the silk the egress of the spider would probably be effected easily enough, but even without that. Surely if we can bring ourselves to believe that each time it seizes a worm it must necessarily break through, and partially destroy the sack, we may reasonably suppose it capable of breaking through a few threads at the external end, “which is distended more than the rest.” And although represented as sluggish by day it may be active enough by night, as most nocturnal animals are. The absence of all appearance of food in the

cells goes, I think, a great way to prove that they are nocturnal feeders; and I would, with all due deference, suggest that some one of your correspondents should endeavour to clear up this point, which might, I think, be done at the sacrifice of a night's rest (no great matter to a truly zealous naturalist), by visiting the haunts of these wonderful spiders by night, with a dark lantern, which being suddenly opened some might possibly be discovered wandering, or foraging, in the vicinity of their cells, their retreat to which might be intercepted. Domiciliary inspections might then be made, and, should the greater number prove untenanted, we should then have good reason for believing that they are nocturnal in their habits (as one of Mr. Newman's correspondents supposes them to be), and may possibly leave their house-door open, which would be a great saving of labour; but, if there is the least elasticity in the web, the rent or opening need not be very large. If the Atypus are not found to frequent their subterraneous dwellings during summer, is it not possible that they pass the winter in a torpid state? if so, this would at once account for there being no remains of insects found in their cells,—also for their rather mysterious self-imprisonment. As to the worm found in one nest, it may have been, and probably was, accidental; for it seems very improbable that the spider's means of subsistence, not to say its very existence, should be left to mere chance, *i. e.* to be made to depend on the accidental passage of a worm through its cell, which is said to be only $\frac{1}{2}$ or $\frac{3}{4}$ of an inch in diameter. It may be remarked that the common spider has in a great measure to trust to chance for its supply of food: this is true enough, but the chances are so much in its favour that they amount almost to a certainty, whereas in the case of the Atypus nothing could well be more uncertain. For the above reasons I am inclined to think that the Atypus either comes forth to feed by night or passes the winter in a torpid state.—*H. W. Hadfield; High Cliff, Isle of Wight, March 7, 1856.*

On the Preservation of Spiders. By R. H. MEADE, Esq., F.R.C.S.

In the 'Zoologist' for December, 1852 (Zool. 3676), I published a few observations upon the mode of forming and preserving a collection of spiders, and I then recommended that the specimens should be put up in small glass tubes filled with spirits of wine. Further experience has shown that this plan is open to this great objection, that unless frequent attention is paid to the collection the specimens become spoiled by the evaporation of the spirit, which finds its way through both corks and sealing-wax, the latter being rendered quite soft by the vapour. Being desirous to overcome this difficulty, I made several experiments with different fluids, for the purpose of finding a liquid that would preserve the form, consistence and colours of the spiders, without undergoing decomposition or evaporating rapidly.

Among other mixtures I tried Goldby's Fluid, but found that the

specimens immersed in it became soft and spoiled in a few weeks: I also used simple solutions of several salts, without success; when by accident I met with one, which, as far as I have tried it, seems to answer admirably, viz., sulphate of magnesia or Epsom salts. A strong solution of this salt happened to be upon the table one evening in July, 1854, when I returned from a short excursion to the sea-side; and having brought home, among other objects of natural history, a small fish, the name of which was unknown to me, and which I had not then time to examine, I immersed it in some of the solution of salts, thinking it might preserve it for a few days, until I had more leisure. It remained unnoticed in the fluid for two or three weeks, and when removed was apparently as fresh as when placed in it, and had undergone no change of colour. As it appeared to preserve the fish so well, I determined to try the same fluid upon spiders, and the result fully answered my expectations. I have now specimens, which were put up in August, 1854, the colours and forms of which are as perfect as they were on the day they were placed in the tubes.

Though eighteen months can scarcely be considered long enough to afford positive proof of the preservative action of this salt during a very lengthened period, yet the experiment has so far succeeded that I think it may fairly be laid before the public, and I hope other naturalists may be induced to make trial of it. To insure the success of this plan it is necessary that certain precautions be adopted. In the first place, if the salt be simply dissolved in water, the solution decomposes and becomes flaky and turbid in a short time: to obviate this, it is necessary either to acidulate the fluid with a few drops of sulphuric acid or to add to it a little spirits of wine. I have tried both these plans, and give the preference to the latter, the acid I think slightly injuring the colours of the specimens. In the second place, if a recently captured spider (particularly a large-bellied one) be placed at once in a small tube filled with the saline solution, the juices of its body mixing with the fluid cause the latter to become mouldy: I always, therefore, immerse the specimens in rectified spirits of wine, for at least twenty-four hours, and then either wash them quickly in a little water or let the spirit evaporate from the surface before putting them up in the saline fluid. If this last precaution be neglected the salt crystallizes on the surface of the spider, and the liquid becomes turbid, which I account for by the rectified spirit having such a strong affinity for the water that it absorbs it rapidly from the layer of the solution which it first comes in contact with, and the salt assumes the solid form.

The proportions and manner in which I mix the ingredients are—sulphate of magnesia three ounces, hot water six ounces; strain this when cold until it becomes perfectly clear, and then add three-quarters of an ounce of rectified spirits of wine: the mixture may be kept in a stoppered bottle. The specimens look better put up in tubes which are not much wider than the bodies of the spiders; they can then be examined (unless when a minute investigation is required) through the walls of the tubes, without removal from the liquid: this remark will not apply, of course, to very minute species.

In arranging a collection of spiders in drawers, I before recommended that the tubes should be placed in an upright position, by means of small holes perforated in a sheet of card, forming a false bottom to the drawer; but I now think that they show better laid down in rows: a label bearing the name can then be gummed on the upper side, and the tubes may be prevented from shifting their position by means of a number of small strips of vulcanized India rubber stretched across the drawer.

As I stated upon a former occasion, if a simple and good plan for the preservation of spiders and other allied animals (possessing soft bodies, which shrivel up in drying) can be discovered, one considerable impediment to the study of Arachnology will be removed, for hitherto there has been a great difficulty in forming and keeping any collection of these interesting objects, and it is almost necessary to have the beings themselves before us, for comparison and re-examination, to make any proficiency in the science. About 250 British spiders have already been recorded, and the number would very soon be greatly raised if a few more labourers could be induced to enter the field.

Spiders may be found in almost every locality; some inhabit houses and outhouses; others woods, fields and gardens; and with a little practice they may easily be captured in the fingers, without injury to their delicate structures. The collector should carry a small phial or two, filled with spirits of wine, and into these he may plunge most of his captures at once: they are thus quickly killed, and they can easily be taken out and the surface dried by evaporation, when required for examination.

I will close these observations with a few words on the chief places in which to look for spiders. Many will be found beneath stones and pieces of rock; some excavate hollows in the ground, and bring up their young, as, for example, several species of *Drassus*; some may be met with under the loose bark of trees, or in the leaves of plants,

the edges of which they curve together and fasten by silken threads: many of the Clubionæ have this habit: the loose stones forming the dry walls by which the fields are separated in many parts of the country afford shelter to many species, as the *Textrix lycosina*, the *Segestria senoculata*, &c.: numbers of the web-forming kinds may be found seated in or near their snares; many of the Epeiridæ, Linyphidæ and Theridiidæ may thus be captured: numerous species live on the ground and should be sought for at the roots of grass in old pastures, or on heaths and commons, or among the stems of aquatic plants; the *Lycosæ*, which wander about in pursuit of their prey, may thus be found: some spiders excavate deep holes in banks, which they line with silk, as *Atypus Sulzeri* and *Agelena labyrinthica*; others live under water, as *Argyroneta aquatica*; and, lastly, a few inhabit the blossoms of flowers, as *Thomisus citreus*.

R. H. MEADE.

Bradford,
March, 1856.

Captures of Doritis Apollo in Britain.—I have heard of many captures of *Doritis Apollo* in Britain, but cold water is always thrown on them, and so no record is often made of extraordinary captures. Sir Charles Lemon wrote to me that one was taken near his house [in Cornwall], but he thought it was imported with plants in the pupa state. Mr. Hudson Heaven told me that his father, the proprietor of Lundy Island, took one (or two) near Portishead, Somersetshire. Weaver took the larva near Ambleside, and Mr. Wailes formerly gave me an account of its occurrence in the Isle of Lewis, besides Sir William Hooker's account. I don't know why Mr. Wollaston did not give the captor's name: that is essential.—*J. C. Dale; Glanville's Wootton, near Sherbourne, March 8, 1856.*

Fascination of a Butterfly by a Lizard.—“One evening, being seated in a room at Gorruchpore, the window of which was open, and the ceiling on one side sloped downwards towards the window, my attention was attracted by a butterfly which chanced to fly into the room. I observed its motions for a minute or two, when I thought there was something that appeared unnatural in them, and the insect began to dart to and fro in one direction, occasionally, however, varying its flight about the room. I looked up to see what it could possibly be at, and instantly observed an ordinary-sized lizard on the cloth of the upper ceiling. I had not even then the most distant idea of what was really going on; but seeing the butterfly dart every now and then at the lizard, I supposed it in play, till its motions became less quick and animated. The lizard remained all this time immovable, but at last suddenly shifted its ground to the sloping part of the ceiling. The motions of the butterfly became still more languid, until at length, to my utter surprise, I saw the lizard open its mouth, and the butterfly directly flew into it. The lizard was about half a minute in swallowing it, wings and all.

Until the last act of this curious scene, though I well knew the lizard's object, I supposed it would probably make a leap at the butterfly, yet had no idea of its succeeding, and expected to see the butterfly fly away. Had I had an idea of the case I should instantly have broken the charm. From that moment I never had the least doubt of the power of fascination: that power I conceive to be *terror*, which, if the object was sufficiently terrible, I believe would act equally on man or any other creature."—*From the 'Bengal Sporting Magazine' for October, 1836; communicated by Mr. Frederic Moore.*

Capture of Pamphila Actæon, &c., at Lulworth Cove.—On looking over some of the earlier volumes of the 'Zoologist,' I find a notice of the capture of *Pamphila Actæon* in Dorset. The following extract from my note-book may not be uninteresting:—"August 22, 1855. Visited Lulworth Cove by an excursion steam-boat from Weymouth. The beauty of the scenery was much enhanced by the fine weather. The Cove is a charming spot, the basin being nearly circular and surrounded by picturesque rocks. The clearness of the water is heightened by a shore of white pebbles. For three or four hours I searched in vain for *Actæon*: at length I came to some small furze-bushes, overgrown with brambles, fern and thistles, and here was rewarded by finding the object of my search. While the sun shone brightly several specimens of *Actæon* flitted over the herbage. It looks very small when on the wing, chiefly owing to its manner of flight (like the other 'skippers'), and also on account of its dingy colour. When clouds obscured the sun all the butterflies disappeared, settling on low branches of furze, &c., in which position it was almost impossible to secure them, for directly I approached the spot they dropped down among the grass, &c., and were lost. I noticed more females than males." As the hour was late and the sky clouded I did not secure so many as I wished. Near the same spot I took one *Pempelia carnella*, in perfect condition, on the wing at dusk, and *Pterophorus lithodactylus* at rest on the flowers of *Pulicaria dysenterica*.—*S. C. Tress Beale; Ivy Court, Tenterden, Kent, March, 1856.*

Note on the Occurrence of Exotic Sphinges in Britain.—Mr. Wilson, of Edinburgh, says a pigeon could fly from Algiers to Edinburgh in twenty-four hours, and that moths can fly far over the sea is well known. I have a moth taken at least a hundred miles out at sea, yet Mrs. Raddon was ridiculed when she said she saw a specimen of *Deilephila Nerii* in Devonshire. I saw a very old English print in which *Nerii* was figured under the name of the "Rose-bay Moth." There can be no doubt that such insects cross the Channel, especially in a high wind. I saw a specimen of *Sphinx quinquemaculatus* actually bred at Leeds; another taken at Hull; one at Chelsea, and I have heard of two or three others.—*J. C. Dale; Glanville's Wootton, near Sherbourne, March 8, 1856.*

[Nothing is more probable than that the pupæ of Sphinges which bury themselves in the earth should occasionally be imported amongst the roots of exotic plants. I possessed for many years a specimen of *Sphinx Druræi* which bore a first-rate pedigree as a true Briton, and I have seen others. I gave my own the cold shoulder because I thought it diminished the value of its neighbours in the same drawer, casting a kind of doubt on their reputation. On the same principle a cabinet of Lepidoptera that contains *Podalirius*, *Chryseis* or *Virgaureæ*, falls fifty per cent. in my estimation; and a cabinet with *Daplidice* or *Lathonia* I look on with great distrust, although I know of six *Daplidices* and about as many *Lathonias* that really possess clean bills of health.—*E. Newman.*]

Saturnia Pavonia-major four years in the Chrysalis.—For two or three nights we were disturbed by a noise something between a mill grinding and a cat purring, and could not make out whether a ghost or mouse, or what other "something," had got into the cabinet: on examining I found a much-crippled specimen of *Saturnia Pavonia-major*. I was not aware that I had any pupæ of this insect, and certainly must have received it in 1851, when Mr. Wollaston gave me four or five specimens. I bred three males and one female, and was not aware that one was left. I am quite sure I had received no others during the five intervening years.—*Id.*

Notodonta camelina not Double-brooded.—In the January number of the 'Zoologist' (Zool. 4952) Mr. Crewe remarks, with reference to my note at page 4899, that I seem "to infer that *Notodonta camelina* is not double-brooded," which, however, he has proved to be the case, and gives, in support of his assertion, an account of four eggs found by him on the 28th of May, which, on being taken "especial care of," produced moths in the following August. Mr. Crewe does not appear to be aware that many of our moths, when reared in confinement, will produce second broods in the autumn; but in order to prove that *N. camelina* is really double-brooded, he must show that the species is also produced out of doors in the summer and autumn, from the eggs laid the preceding spring; in other words, that the four eggs he alludes to, if he had left them on the bush, would have become moths in August, as they did in his cage. Like Mr. Crewe, I have had the eggs of *N. camelina* laid in May, and produced plenty of moths from them in July and August; but this is no argument whatever in favour of the species being really double-brooded: probably the more abundant supply of food, with less exercise than in the wild state, causes this premature development, just as a more scanty supply to the larva will retard the growth. Of this latter I have had a rather curious instance in the case of *Ennomos illunaria*: it is well known that the larvæ of this species, from the eggs laid by the spring brood, produce the small July specimens, the *Jularia* of Haworth: if, however, these larvæ when young be scantily supplied with food, and their growth thereby retarded, they will, if eventually fed more liberally, attain the full size of the autumn larvæ, and produce illunarias in the following spring. In conclusion, I will give a very common instance in which confinement produces an autumnal brood. If the larvæ of *Arctia Caja*, hatched in July or August, be plentifully supplied with food, we always find a number of the brood grow rapidly, attain full growth, and produce moths in the autumn, while some of the same brood, in the same cage, probably still remain small: as they pass the winter out of doors, the artificial manner of living must produce this effect; for I fancy our most inveterate brood-mongers never meet with this moth in the autumn, nor see the full-grown larva galloping across their path in October, as they do in May and June.—*Edwin Shepherd; Fleet Street, March 5, 1856.*

[I may state that I entirely concur with Mr. Shepherd in believing that *Notodonta camelina* perfects but a single brood in the year, neither can I conceive that the case is altered, or even modified, by the fact that some of the perfect insects are disclosed months before the usual time.—*Edward Newman.*]

Cheimatobia borearia in the South.—On the 10th of November last I had the pleasure of capturing this species a few miles from this town: they were in considerable numbers, hanging on the twigs of dwarf birches. I obtained both male and female. On the same evening my friend Mr. Winter took two specimens, at light, in this town. I have never before heard of this insect appearing so far South.—*Henry Cooke; Brighton, February, 1856.*

Adaptation of the Colouring of Moths to Autumnal Tints.—I am not aware whether any entomologist has ever been struck by the (as it appears to me) singular adaptation and similarity of colouring, in the autumnal and winter Lepidoptera, to the prevailing tints of Nature during those seasons. Counting from the middle of September, when the leaves begin to turn, till the end of February, we find, I think, among the Bombyces, Noctuæ and Geometræ, about fifty-eight species on the wing. Now, in autumn the hue of Nature is golden; she passes through all the intermediate stages from pale yellow to a rich deep brown, while in winter she assumes a gray or silvery garb. Taking those fifty-eight species, we find, I think, in their prevailing colours a striking and remarkable similarity to those which Nature assumes at the time of their appearance in the winged state: three species, viz., *A. cassinea*, *T. Cratægi* and *A. lunosa*, I consider doubtful. Seven militate against my theory, viz., *P. Populi*, *C. exoleta* and *vetusta*, *C. aprilina*, *M. Oxyacanthæ*, *A. pyramidea* and *P. meticulosa*. The remaining forty-eight are decidedly in my favour, as any one may perceive who will take the trouble of casting his eyes over the following list. Autumn tints: yellow to rich brown. Autumn species: *O. antiqua* and *gonostigma*, *P. plumigera*, *A. litura* and *pistacina*, *C. xerampelina*, *D. rubiginea*, *E. fulvago* and *trapetzina*, the genus *Glæa*, *G. flavago*, *O. Lota* and *macilenta*, *S. Libatrix*, *S. Satellitia*, *S. xanthographa*, the whole of the *Xanthiæ*, *X. croceago*, *X. petrificata*, *semibrunnea* and *rhizolitha* (perhaps this belongs more properly to the winter), *C. elinguaria*, *E. erosaria*, *alniaria*, *fuscanaria* and *tiliaria*, *E. apiciaria* and *parallellaria*, *L. defoliaria* and *aurantiaria*, and *H. pennaria*. Winter tints: gray or silvery. Winter insects: *H. leucophæria*, *progemmaria* and *rupicapraria*, the genus *Cheimatobia* and *A. æscularia*: in all forty-eight. I think that an attentive examination of the above will show that I have made out a fair case; and though some of your readers may be disposed to add two or three to the autumnal species, yet even so the vast majority will be found to accord with my view, and it certainly strikes me as a very interesting fact, showing the hand of an Almighty and Allwise Being to be visible in this, as in all the other works of creation. I take this opportunity of asking whether any of the entomological readers of the 'Zoologist' can inform me in whose collection can be found authentic specimens of *Valeria oleagina*. I have looked carefully over the innumerable records of the captures of rare species contained in the thirteen volumes of the 'Zoologist,' without having found any collector who appears to have been fortunate enough to take this species. It may have been recorded there, but if so it has escaped my notice. I should be much obliged for information on this point.—*J. Greene; Brandeston, Woodbridge, Suffolk, March, 1856.*

Lampronia prælatella.—It would appear that this larva has been sought for unsuccessfully by some. It is to be found only in very damp places. The first spot I met with it was on the leaves of the wild strawberry, growing close by the foot of the middle water-fall at Aberfeldy, where everything was saturated with spray and the mosses and ferns rejoiced in the wet atmosphere of a tropical Orchid-house: half-way up the bank it had disappeared. The next spot I found it in great abundance on the strawberry, the Geum and the Spiræa, was where the shelving side of the wood was moist enough to suit *Saxifraga aizoides*, which was growing there abundantly.—*G. Wailes; March, 1856.*

Nomada borealis.—The notices in the 'Zoologist' and 'Entomologist's Annual' would lead to the inference that the discovery of this species in this vicinity was recent, and therefore it may as well be stated that I met with it here about the year 1830. It is one of our most abundant Nomadæ. That my specimens remained, like

Mr. Newman's, unknown, is hardly to be wondered at, considering the little attention then paid to those minute differences now found to be so essential, and the known variableness of the species of this genus. Zetterstedt appears to have captured it during his Lapland tour in 1821, and, when separating the species from its allies, in a most admirable description (written previously to 1832, though not published till 1840), adds, "Difficilis species hujus generis inter se valde affines diagnoscendi veniam dabit prolixæ descriptioni."—*Id.*

Nomada xanthosticta.—For the last three seasons I have taken this species in company with *Andrena analis*, of which it is in all probability the parasite. When Mr. Smith's invaluable work on our bees made its appearance, I suspected it to be some variety of *N. Roberjeotiana*, as the square cream-coloured spot on the fifth segment of the abdomen of the female was particularly alluded to, and on referring to Panzer I found that distinction well characterized. I was the more inclined to think so, as that peculiarity is neither noticed by Smith nor Kirby when describing *xanthosticta*, though it is equally well developed in both species. On forwarding a pair to Mr. Smith he pronounced it to be this insect, but he did not know the male, in which the abdomen is—with the exception of the darker markings—self-coloured, all the yellow or cream-coloured spots being replaced by rufous.—*Id.*

Fenusia pumila.—Every Micro-Lepidopterist must have noticed the large irregular blotches with which the foliage of the bramble is covered in September and October. My friend Mr. Stainton pronounced them to be the mines of some Coleopterous larva. I determined, therefore, to watch their transformations, and accordingly found that they quitted the mine and penetrated to the bottom of the bottle, in which I had placed a layer of damp sand: here they formed a semi-transparent cocoon (or rather in this case *cell*, as the side next the glass was flat, so that I could see the enclosed larvæ and pupæ), coated externally with grains of sand, very similar to that of many of the Tenthredinidæ. The larvæ remained unchanged for several months, and in July the perfect insects appeared. Neither Klug, Hartig, Le Pelletier nor Brullé notice its transformations, nor can I find that they have been mentioned hitherto in any work, though Mr. Westwood seems to have met with a similar larva mining raspberry leaves.—*Id.*

Occurrence of Chærocampa Celerio near Brighton.—Through the kindness of Mr Mitten, of Hurstpierpoint, about seven miles from here, I have added to my cabinet a specimen of this Sphinx, taken on a shutter in that village, in September, 1852. It was brought to Mr. Mitten alive, and has been in his possession until now. Mr. Mitten has likewise added to my collection *Acronycta Alni*, bred by him in 1853, from a larva found in the previous autumn feeding on Spanish chestnut; and a female of *Endromis versicolor*, taken by him in April, 1852.—*John N. Winter*; 28, *Montpellier Road, Brighton*, March 28, 1856.

Note on Cynips Lignicola and Description of its Parasite (*Callimome flavipes*).—I have just seen the Address delivered at the Anniversary Meeting of the Entomological Society, by Mr. Newman, containing a notice of the oak-galls so abundant in this neighbourhood, which I have no doubt will ultimately be turned to some good account for the manufacture of ink. The galls in question are stated to have been brought into notice by Mr. Rich, at the November meeting of the Entomological Society. Now I believe this is incorrect: I was the first to take particular notice of them. I sent some of the galls to Mr. Westwood as far back as 1848 or 1849, to ask the name of the Cynips which caused these excrescences,—I sent to him through one

of the gardening periodicals,—and received from him the name of *Cynips Quercus-terminalis*.—This was stated in a letter I wrote to Mr. Stainton some months ago, which was read at one of your meetings, and caused a rather sharp discussion: Mr. Westwood was there, but took no part in it; he no doubt considered that the name he had given was the correct one, but in this he was in error, as the gall now appears to be the *Cynips Lignicola* of Hartig: had it been new, or should a specific difference between our insect and *Lignicola* be hereafter detected, I would suggest the name of *Cynips Quercus-gemmæ*, as the parent insect deposits its eggs in the buds themselves, and the galls are produced at the expense of the buds. I do not see cause for such alarm as one would be led to suppose, through reading an article in the 'Gardener's Chronicle' some short time since. It is true the insect is very injurious to the young trees in particular: in the two large nurseries in Exeter the young trees are sadly distorted, and they cannot make head-way against the enemy, but once turn the galls into use and they will disappear much faster than they have been produced. I before stated, in the letter read by Mr. Stainton, that it is rare to see the galls above ten feet from the ground, but the nearer the ground the thicker the galls, and, on the little twigs lying on and just above the surface of the ground, nearly every bud has been metamorphosed into a gall: as you ascend upwards they gradually diminish in number, until the line may be drawn at ten feet, above which only a few stragglers can be found. The winter before this last the tom-tits (*Paridae*) had found out the secret of what was in these galls, for they were never at a loss for a meal: when the ground was covered with snow I have seen numbers of the common blueheaded titmouse (*Parus cæruleus*) working away at the galls, in search of the fine fat larvæ of this *Cynips*; and this winter the titmice appear to have been even more destructive to the larvæ, for now in a short walk you may find hundreds, nay thousands, of galls that have been picked to pieces to get at the insect within. Should these galls be turned to account for the manufacture of ink, being so near the ground they could be easily gathered by children, so that the cost would be very trifling. It is said, by the writer in the 'Gardener's Chronicle,' that the galls diminish the crop of acorns: now I cannot believe this, because, as I said before, it is uncommon to find them on the large trees, and it is well known that it is only the large—I may call them mature—trees that produce acorns, so that the injury done to them cannot be great. As regards the species of this *Cynips*, it certainly is not the *C. Quercus-folii*, *Linn.*; though the figure of the galls and the perfect insect, given by J. Ræmur in the 'Genera Insectorum, Linnæi et Fabricii,' agree pretty well, the description does not agree at all with our insect. I bred some of our species in 1848, the first year that I came into Devonshire; and in 1849 I bred the parasite of the *Cynips*, which I forwarded to Mr. Smith, at the British Museum: that gentleman very kindly showed them to Mr. Walker, who pronounced them new. It is a splendid species of *Callimome* which I shall call

CALLIMOME FLAVIPES.

Description of female. Head and thorax and base of abdominal segments finely rugoso-punctate; base of the antennæ in front and the legs pale yellow; tips of the tarsi dusky; the rest of the antennæ blackish brown, as is also the sheath of the ovipositor; base of the wings pale yellow; wings splendidly iridescent; head, thorax and abdomen beneath of the most magnificent shining green; the basal and two next segments of the abdomen above very highly polished, and reflecting a steel-blue in certain lights; mouth pale yellow; eyes brown. Length 3 lines, of ovipositor 3 lines,

making the entire length 6 lines; expanse of wings 5 lines. This is the most magnificently coloured British insect I am acquainted with: the genus *Chrysis* is very beautiful, but the splendid green of this insect by far surpasses it.—*E. Parfitt*; 4, *Weirfield Place, St. Leonard's, Exeter*, April 7, 1856.

What is Ilybius angustior?—Whoever undertakes to untie this knot is certainly a bold man. The Rev. Mr. Clark has very kindly attempted a revision of the nomenclature of our water-beetles, and the results have been made public, first in the 'Zoologist' (Zool. 4846, 5005, 5048), and, secondly, in a separate list. Now having long been puzzled as to the meaning of the names *guttiger* and *angustior*, I was truly glad to have the opportunity of examining some carefully-named *Colymbetes* which Mr. Clark had lately presented to Mr. Douglas, expecting that my "entomological difficulty" would at once be removed; but it was not so: from the said specimens I immediately learned that *Ilybius guttiger* of Clark was *Ilybius obseurus* of London collections. Shortly afterwards I saw Mr. Stevens's rich collection, recently revised by Mr. Clark, and there the same change of names occurred. I then wrote to Mr. Clark, stating my difficulty, and that gentleman, with his usual prompt courtesy, replied by sending a series of what he really wished should be understood by the names "guttiger" and "angustior," and behold the whole of them were of *one* species, and that the species we take at Woking. It is a remarkably uniform species; no perceptible difference exists in sculpture, form or colour, but there is a difference in size, and Mr. Clark's *guttiger*, as published, represents the larger examples, his *angustior* the smaller examples, which any day's fishing at Woking may produce: every intermediate gradation of size will be found in the same day's work. Are all the Woking examples *guttiger*, for so we used to call it? And if *guttiger*, then what is *Ilybius angustior*? To reverse the question, suppose them all *angustior*, then what has become of *guttiger*?—*Edward Newman*.

Whom shall we follow? another Necessity.—With the appearance of Mr. Stainton's 'Manual of Butterflies and Moths' we are introduced to a new nomenclature, and I need scarcely point out to any of my brethren how very tantalizing it is, just after they have arranged and rearranged their collections, to find that another candidate offers himself for election. There seems to be a sad want of unity amongst us,—the more noticeable, perhaps, because we are so small a body,—such a continual shifting and changing of names, that to all appearance we shall never arrive at anything definite; and I think that perhaps it would not be out of place if the leading members of the Entomological Society were to call a meeting and consider the matter dispassionately, whether the arrangement by the late Mr. J. F. Stephens, as now standing in the British Museum, should be adopted; whether that of Mr. Doubleday, whom I believe all of us have of late unanimously followed; or whether that of Mr. Stainton, now appearing, is to be *the* list. Perhaps these remarks will call up some other kindred spirits to take an active part in such an important matter, and I at present forbear from making any further comment until I see how this idea is received.—*John Scott; South Stockton, March 31, 1856.*

A few Words about Advertisements: another Thing hoped for.—Whilst condemning the passing off of undoubted foreign insects as *bonâ fide* English ones, it might be well to say a word or two as to the facilities placed in the way for assisting such as have a *penchant* after this fashion in obtaining them, and also for showing how such insects might get ranked amongst legitimate members without any intention on the part of those who had them from the sellers to pass them off as British. These

facilities are not a few, and an attempt at the stopping up of one or two of these little holes, which let in much light, is the object of the present paper. Let us take, for example, the wrapper of almost any of the parts of the 'Zoologist,' and we will find that there we have Lathonias, Daplidices, &c., advertised as always on hand, as well as "such a collection of rarities as is not to be seen elsewhere," and no clew whatever is given as to whether they are natives. Now first, passing by those who really are up to the proper construction to be put on this mode of doing business, let us suppose the 'Zoologist' falling into the hands of a simple workman whose taste inclines this way: he at once perceives how, at a trifling cost, his little stock might be increased and enriched, and so, without giving the matter further thought, he immediately writes off for an example or two of these scarcer species: then by-and-bye this man dies,—there has been no record kept of where he obtained these insects,—his little collection by chance falls into the hands of some one who really knows their value, he having naturally concluded that they could never have fallen to the lot of their first possessor through any other means than his own net. Here there was no design to "work the oracle," and does it not show how curiously rarities *may* get introduced amongst us? and how, no doubt, many have been gulled? I must admit that getting one or two novelties in this way would cost me a pang or two to abandon them, when there was no one to disprove the notion that the original possessor had not captured them, and I would be as willing to make every allowance for the tenacity of any of my brethren under like circumstances. Then for those whose ambition does not soar higher than the committing such deeds,

"——— that a brother should
Be so perfidious!"

see of what valuable assistance these advertisements are to him: he counts over and calculates on his exchanges, and how nicely he will *do* the unsuspecting at about three-pence a head, exclusive of repinning and resetting. *Resetting* has another meaning in Scotch law; and years may pass before such a game is detected, or, if it for a moment glanced across the memory of any one,—first thoughts are purest,—he would not allow himself to think that such an one could be but honest. This article has grown longer than I intended, and so, without quoting any more illustrations, which might be easily done, and without in any way meaning offence to the worthy editor of the 'Zoologist,' would it be consistent to ask him to banish such notices from the wrapper? or the present insertors might be induced to state which insects are foreign and which are British, and not leave us to imagine "whichever we like, we pay our money and we have our choice."—*Id.*

Terra Incognita.—There exists among British entomologists a great partiality for established localities, which, though perhaps commendable, does very little to increase our knowledge of the distribution of insects or the species inhabiting our little island. The collector knows the product of a particular locality, and cannot prevail upon himself to visit a new district where the result may be uncertain and unsatisfactory, yet if by chance a rich locality is discovered he is not slow to avail himself of it. An excuse can be offered for the entomologist whose occupation will only allow of a holiday at rare intervals, for then the inducement to visit a spot where his perseverance is likely to be rewarded is considerable; but for the entomologist whose time is his own none can be urged. It is for him to seek the secluded nooks and corners of Britain, where an insect-hunter is yet an unknown visitor; it is for him to extend and enrich

our native lists: possibly he may meet with disappointment, but by far the most probable surmise is that he will be well rewarded for his trouble. Thanks to the assiduous labours of a few practical entomologists, our knowledge has of late years been greatly increased, and perhaps at no other period has so much attention been accorded to the study, but still much remains to be done. It is impossible to form an idea of the number of species yet remaining undiscovered. It is well known that many species are very local, and it may reasonably be supposed that there are many such in existence entirely unknown. Scotland but a few years back was "terra incognita," but what a rich field has there been opened! rare insects have occurred in profusion, and it is no presumption to imagine that other localities may prove equally rich. Wales and Ireland both assert their claims to a careful investigation, but still in "Old England" there remains much untouched ground, which is not open in so great a degree to the objection of distance as either of the former are. Among the Tineina and Tortricina a rich harvest may be expected: these families, not being so easily attracted as the Noctuidæ, may have remained local and unknown for ages. Doubtless many well-known and explored localities may still produce new species, but such localities, being principally in the vicinity of London, might be left to those collectors who can only escape from toil one day in the week. The quicker we arrive at a complete knowledge of the Entomology of Britain the better, for in these days of railroads and building none can say what species may not be exterminated which eyes of man have never gazed upon. These remarks are most applicable to the neighbourhood of large towns, which, by the rapid extension of their suburbs, must eventually cause the destruction of many species. The labours of such collectors as Weaver, Harding, Bouchard, &c., have demonstrated the result of perseverance in new localities; and, in conclusion, I would only add that the enterprising entomologist who would wish to extend the list of native species must overcome his partiality for old localities, and visit "terra incognita."—*C. Miller; 17, Silurian Terrace, Broke Road, Dalston, April 4, 1856.*

What is Indigenous?—One says, born in a country; another, born of native parents; another, living in a country for several generations; and if we turn to Johnson's Dictionary, that repository of etymological wisdom, we find "Originally produced or born in a country." All this is very perplexing, but when we look at the actual state of affairs our difficulties are increased tenfold. Thus to take the inhabitants of Great Britain:—but first a word as to the extent of this country. There are certain little bits of land, lying off the French coast, which are so happy as to acknowledge the sovereignty of our gracious Queen: now are these a part of the Continent, or of our island? our botanical friends say they belong to us, but Entomologists scout the idea. "Who's to decide when doctors disagree?" And now as to the Fauna and Flora of Great Britain: the quadrupeds have all been known for years, and a new one would have a hard struggle to get into the list; and thus there is more than one species of rat, in and about our docks, which have lived there for generations without any prospect of being raised to the rank of indigenous: an ornithologist, on the other hand, considers every bird to be English which has ever been shot on English ground, and very many of those on our list have never been known to breed here. Again, in

botanical works we constantly find such expressions as these, "Escaped from cultivation," "Probably imported," &c., which remind one forcibly of Defoe's description of the true-born Englishman: all importations up to a certain date claiming a proud superiority over all those which happened to be a few years later, the date itself being no fixture, but moveable at the discretion or indiscretion of the author. In Entomology, in addition to the above, a new difficulty besets us, owing to the magic power of the word indigenous in raising the money-value of an insect: a large number of specimens, having no pretensions to the title, have been sold as natives to those who were soft enough to buy them, till at last a degree of suspicion has arisen on the subject which quite overruns all reasonable bounds. Thus it is not sufficient that an insect be caught on English ground, or even that the larva be found and the perfect insect bred; but this perfect insect must come into the hands of one of the magnates of the entomological world, and even then its title is precarious, and often exposes its owner to ill-will and backbiting. That some degree of doubt necessarily attends the adoption of a novelty,—that the observations of those accustomed to observe are far more trustworthy than those of other men, and that men feel more confidence in the evidence of one they know than of a stranger, no one will deny,—but this is surely going too far; and while collectors are so eager to fill up their collections, and to that end are willing to give such fabulous prices for rarities, there seems to be no chance of any abatement of the evil.—*Thomas Boyd* ; 17, Clapton Square, April 3, 1856.

PROCEEDINGS OF SOCIETIES.

LINNEAN SOCIETY.

March 4, 1856.—THOMAS BELL, Esq., President, in the chair.

Dipterous Larvæ voided by Human Beings.

Mr. Newman read some observations on larvæ of Diptera voided by human beings. Through the kindness of Dr. Gull he was enabled to exhibit specimens lately obtained from a female child under the care of Mr. Henry Ewens, a medical practitioner residing at Long Sutton: the child had suffered for two or three weeks from epileptic fits, which became worse and more frequent; her countenance became vacant, and her memory much impaired: previously she had been sharp and intelligent. Both Mr. Ewens and Dr. England, of Wisbeach, who was subsequently called in, prescribed purgatives and the sulphate of zinc. The child got worse, and became almost idiotic, losing entirely the faculty of speech. Finally she voided a great number of the larvæ exhibited; Mr. Ewens administered turpentine; still larger quantities were passed, the child recovered, and is now perfectly well. Mr. Newman exhibited two specimens mounted in fluid for the microscope, and, for the sake of comparison, two others similarly mounted, which Mr. Norman had obtained from a decayed pineapple. He then cited thirty-nine previously-recorded instances which had been noticed by medical men, particularly alluding to a case described by the Rev. Leonard Jenyns, in which the discharge had been enormous and had continued for months, and another which had continued for years: he thought the larvæ found by Mr. Norman

showed the probability of the ova or recently-hatched larvæ having been swallowed with fruit, but he could not account for the long period which they appeared to pass in the human body otherwise than by imagining a series of generations, which, as in the case of *Aphides*, never attained the imago state. He concluded by expressing his total distrust of those recorded instances of similar larvæ having been passed with urine, for, although the passage of such creatures from the mouth to the intestines was perfectly intelligible, there was clearly no similar mode by which they could reach the bladder.

Mr. Curtis expressed an opinion that the subject was one of the highest interest, and one which he had investigated.

Dr. Vinen admitted the interest and importance of the enquiry, but thought it possible that in many of the instances, perhaps in all of them, there had been a want of that excessive care, that rigid exclusion of all sources of error, which was necessary before the scientific man could receive facts that appeared so anomalous: he then went on to describe a case which had occurred within his own knowledge, in which similar larvæ had occurred not only once, but repeatedly, and this phenomenon he clearly traced to a cause that removed from it all that was abnormal or anomalous.

Sepia biserialis in Cornwall.

The Secretary read a note from Mr. Couch, recording the occurrence of *Sepia biserialis* in Cornwall.

March 18, 1856.—WILLIAM YARRELL, Esq., Vice-President, in the chair.

Influence of Sexual Organs on External Characters.

Mr. Yarrell read a paper “On the Influence of the Sexual Organs in modifying External Characters.”

This paper referred principally to the three species of British deer, noticing the effect produced on the horns by the occurrence of disease, or by the various modes of mutilation practised on males and the appearance of a horn on females occasionally, as the operation of a known physiological law. The effects observed on both sexes of our common fowls, whether from original malformation, subsequent disease or artificial obliteration of the sexual organs, were described: also the changes observed in the plumage of both sexes of our ducks, the males of most of the species quitting the females as soon as incubation commences; and the cause of the summer seasonal alteration which then takes place in their plumage, to be afterwards entirely obliterated by the regular autumnal moult. Insects and Crustacea were also referred to, and instances pointed out where the sexual organs being double, and one of both sorts sometimes occurring in the same individual, each longitudinal half of that individual was developed under the exclusive influence of the sexual organ on its own side. Various drawings were exhibited in illustration.

Election of a Fellow.

Henry Adams, Esq., was balloted for and elected a Fellow of the Society.

April 1, 1856.—THOMAS BELL, Esq., President, in the chair.

Election of Fellows.

James Alexander Brewer, Esq., and Dr. Thomas Hawkes Tanner were balloted for and elected Fellows of the Society.

ENTOMOLOGICAL SOCIETY.

March 3, 1856.—W. WILSON SAUNDERS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—‘Journal of the Royal Agricultural Society of England,’ Vol. xvi. Part 2; by the Society. ‘Proceedings of the Zoological Society of London,’ Parts 18 to 22, being for the years 1850 to 1853 and part of 1854; ‘Reports of the Council and Auditors of the Zoological Society of London,’ for the years 1852 to 1855; by the Society. ‘Proceedings of the Royal Society,’ Nos. 17 and 18; by the Society. ‘Revue et Magasin de Zoologie,’ 1855, No. 12, and 1856, No. 1; by the Editor, M. Guérin-Méneville. ‘The Athenæum’ for February; by the Editor. ‘The Literary Gazette’ for February; by the Editor. ‘Journal of the Society of Arts’ for February; by the Society. ‘Insecta Saundersiana,’ Diptera, Part V.; presented by W. W. Saunders, Esq. ‘The Zoologist’ for March; by the Editor. ‘Entomologische Zeitung,’ Nos. 1 and 2, January and February, 1856; by the Entomological Society of Stettin. ‘A Manual of British Butterflies and Moths,’ by H. T. Stainton, No. 1; by the Author.

Exhibitions.

Mr. Stevens exhibited a specimen of *Epischnia diversalis*, a reputed British species, taken in October, 1855, by Mr. Mitten, “flying in a thin wood near Hurstpierpoint, Sussex.”

Mr. Stevens also exhibited a few very remarkable insects sent from Borneo by Mr. Wallace. Mr. White took occasion to make some remarks upon these insects, and urged the members to pay more attention to exotic Entomology.

The President exhibited a new Longicorn beetle from N. India, in which were combined several anomalous characters, rendering its relationship very doubtful.

The President also exhibited an amphipod crustacean, from a well at Wandsworth. Mr. Westwood identified it as *Gammarus subterraneus*, *Leach*, belonging to the blind genus *Niphargus*, *Schiödte*. Mr. Lubbock remarked that he had seen a similar example from a well near Bromley, which unfortunately was not preserved. He took this opportunity to mention that he would be glad to receive fresh-water Entomostraca from any part of the world.

Mr. Stainton exhibited a Lepidopterous larva, probably of an *Ephestia*, said to have been vomited by a gentleman.

Mr. Hudson exhibited a *Dorcas parallelipedus* and a living larva of the same species, dug out of an old ash tree at Coombe Hurst, Croydon.

The Rev. W. H. Hawker sent for exhibition a singularly pale variety of *Arctia Caja*, bred at Horndean.

Mr. Douglas exhibited living larvæ, probably of *Ocenerostoma piniariella*, feeding within the foliage of the Scotch fir.

Mr. Walker exhibited a *Necrophorus Vespillo* and a cockchaffer, dug up last month.

Mr. Wollaston exhibited some of the Coleoptera captured by him last summer, at Madeira.

Acari and "Fogging" of Daguerreotypes.

Mr. Tapping exhibited a drawing of an *Acarus*, of which many dead examples were found by Mr. Fedarb, of Dover, beneath the glass of a Daguerreotype ten years old; and as this picture was affected by what is technically termed "fogging," it had been thought there might be some connection between *Acari* and this obscuration of Daguerreotype pictures, a subject which had recently excited much attention.

Mr. White said this *Acarus* was very like, and probably identical with, *Cheyletus eruditus*, the common paste mite; that its presence was due to paste having been used in mounting the picture; and that the destruction of the Daguerreotype was in no way referrible to the *Acari*.

It appeared, however, from the reading of a long correspondence between Mr. Fedarb and Mr. Tapping, that the picture was mounted in a tin tray, and that the plate and glass were so tightly pressed together that the edge of a pen-knife could not be inserted between them, that the whole was in a morocco case with silk lining, and there was no paste, glue or cement used in the mounting.

Destruction of growing Corn by Dipterous Larvæ.

Mr. Westwood said the Society had received from Mr. Botting, of Poynings, Hurstpierpoint, Sussex, some larvæ, accompanied by a letter stating that they existed in the fields in that neighbourhood in vast numbers, destroying the growing corn to a great extent, and enquiring how they might be exterminated. The larvæ appeared to be those of a *Tipula* in a young state, and they would consequently continue to feed for some months, so that there was little chance of any side shoots being left: but he was unwilling to advise that the crop should be merely ploughed up, for as the larvæ were so numerous they would not be much thinned by birds, and a second sowing would have but a poor chance of succeeding. He had recently been consulted respecting some corn crops destroyed by the larvæ of a *Muscideous* fly, probably *Oscinias vastator*, and had advised his correspondent to have the ground turned up and burnt, and he would recommend a similar course in the present instance.

Read the following note by Mr. Newman:—

On the Parturition of Dorthesia Characias.

"The smallest contribution thankfully received." So says every true lover of insect economy: it matters not a straw to him that some one says the subject has been exhausted years and years ago; he still keeps on prying into Nature's secrets, poking his nose into holes and corners, noting with his own eyes and jotting down in his own manner those little domestic scenes which are sure to reveal themselves to every one

who is master of that most simple, most commonplace, but most valuable accomplishment 'how to observe.' Our Secretary gave me, one day last June, a lady specimen of *Dorthesia Characias*: she was evidently in that interesting state in which it is said 'all ladies wish to be who love their lords.' She was confined in a pill-box, without provender, and so was eventually starved to death. *Dorthesia Characias*—the lady, I know nothing of the gentleman of that name which has been obligingly supplied by Mr. Walker—looks for all the world like a little lump of the very purest and snowyest wedding-cake sugar, cast in a mould that Bernini himself might have designed: the moulds of *Dorthesiae* are always elegant, but always deliciously incomprehensible; always cut in open defiance of those little check-strings and chains which entomologists have manufactured as a means of restraining the vagaries of Nature or of fettering her to their systems: not only is there no prothorax or mesothorax or metathorax, but there is no thorax at all,—nothing but the little lump of immaculate frosted sugar aforesaid, out of which grow two black antennæ and six black legs; and yet all is perfect symmetry, the neatest workmanship that can be imagined: one would think that Nature, in her simplicity, had never heard of Leon Dufour or Audouin, De Haan or Strauss-Durckheim, Orismology or Entomology, Comparative or Transcendental Anatomy. What the frosted-sugar-like surface really is I cannot presume to say, but it is thus arranged: first, there is a series of short lamellations or foliations, which commence close behind the head and reach to the middle of the back; and these, considered as a whole, constitute a very respectable little larva, not much unlike the larva of a glowworm when two or three days old: close at the end of this series of scales is the anal aperture; and, as the series itself is only half as long as the insect, it follows that this aperture is exactly in the middle of the back: on each side of the first series of plates are four other plates, not touching each other, but placed at regular distances; these are small, short and rounded, in fact almost semicircular: beyond these again, on each side, are ten longer plates, symmetrically arranged; these are soldered together with exquisite exactness, their sides curved, their ends rounded, and each of their connecting sutures having a slightly altered angle, so that, although the first suture is placed transversely to the mesial line of the body, the last is longitudinal, and therefore parallel to the mesial line. These various scales or plates constitute a sculptured oval shield of the most elegant design and finish; and, out of respect to entomological usage, I would at once call it the thorax, but then the rest of the body must be the abdomen, and thus the anal aperture, or more properly the external opening of the oviduct, would be placed in the thorax, a situation indeed assigned to it by the illustrious Newport in the case of *Stylops*, but otherwise unknown throughout the insect world. Well! from beneath this shield, which we may compare to the body of a lady's dress, emerges an ample skirt, having fourteen plates, lamellations or folds, long, longitudinal and parallel: this skirt is about as long as the body, and is entirely posterior to the aforesaid opening of the oviduct. The under side of the insect is not folded or lamellated, but is smooth, tumid, and gradually sloped off towards the end, just like a ship's bottom: it is perfectly undivided, exhibiting not the slightest indication of abdominal segmentation.

"Now what I am going to narrate may or may not be the economy of the genus, or even of the species; it was the economy of this individual female: the lady may have been crossed in love, like the oyster of which the same sad liability was discovered by William Shakspere; again, she may have remained permanently and pertinaciously a spinster, like Diana, or like the entomologically-familiar *Aphis*-mother: in fact one

may speculate *ad infinitum* on causes,—I have only to deal with results. Certain it is that parturition took place through the aperture in the middle of the back: out of this the young ones sallied one after another, and ran about over their mother's body, just as I have seen rabbits issue from their burrow and course one another over the frost-hardened surface of the snow: they looked exactly like little Acari, and, contrasted with their very quiet, sedate, and almost lethargic mother, were eminently 'fast young men' scampering over the body of their parent, clustering about her head and performing all manner of gymnastic exercises on her antennæ: indeed, greatly to the credit of such restless beings, it must be allowed that, by all kinds of fondling, they seemed determined to exhibit the most ardent filial affection; but this highly demonstrative exhibition was not apparently returned by any maternal *storge*, for nothing could have been more stolid or apathetic than the demeanour of the mother under all this fondling. However, the scene lasted but a short time: mother and children were starved to death, and the latter were placed under the microscope. It only remains to say a few words descriptive of the young, and first as to size and proportions. Measured longitudinally and transversely I found the body was .024 inch, so that it was nearly a circular disk, presenting, however, a number of elevations, depressions and irregularities, which possibly resulted from drying: the colour was pitchy red, but attached to the dermal envelope, in various places, and without any semblance of regularity, were a number of minute flattened bodies, perfectly white, and having the appearance of little flakes of snow: these are so numerous as to give the little creatures quite a dusty appearance: the legs are six; their attachment approximate; their length .035 of an inch, or equal to a diameter and a half of the body: they consist of the four ordinary parts; a well-developed coxa, a femur, tibia and tarsus, so equal in length that there was no discrepancy measurable by the micrometer; the tarsus is exarticulate or composed of a single piece, and armed with a single, terminal, slightly curved, and apparently immovable claw. This mononycous character of the foot does not appear the very best for prehension, yet the prehensile power of the legs is beyond all question, for the little ones crawled about their mother's body with the most perfect *nonchalance*, never tumbling, even by chance, from the dizzy elevation of her antennæ. Each of them had a head, which, however, was a fixture, having no power of motion, but being closely ankylosed to the trunk, and its presence only to be detected when viewed from above, by a line of demarcation; below, on the contrary, it bore a large, straight, and really formidable beak, which Savigny would doubtless have resolved into the constituent parts of an ordinary insect-mouth, but which I could make nothing more of than a beak: its very connexion with the head seemed problematical, and yet I take *that* for granted; but as a matter of *appearance*, mind I am very particular not to say a matter of *fact*, this suetorial instrument seemed to come out of the stomach; indeed, supposing its office that of a pump, for pumping out the sap, one might aptly call it a 'stomach-pump.' The head, moreover, bore—and these were very evident personal property, whatever the pump might be—two very conspicuous seven-jointed antennæ, which gradually, almost imperceptibly, decreased in size from the base to the apex: the fourth, fifth and sixth joints were each marked by a scarcely perceptible ring or indentation at half their length, thus indicating the subcutical existence of three more joints, making ten in all, the number which the mother actually possessed."

Mr. Westwood remarked that the female of the *Dorthesia*, so accurately described

by Mr. Newman, was figured by Burmeister in his 'Handbuch.' With regard to the snow-white covering of the insect, he had no doubt it was a modification of the waxy secretion common to many of the Homoptera.

Mr. Waterhouse observed that the fine powder on the Coleopterous genus *Lixus* had also been regarded as a waxy secretion.

Mr. Curtis communicated the following extracts from a letter addressed to him by Dr. Maclean, of Colchester:—

Economy of Gonopteryx Rhamni.

"*Gonopteryx Rhamni* assumes its perfect state in the end of July or beginning of August. I have bred numbers of them. In a fortnight or month, according to the state of the weather, they become very fat, containing within them also a large bag of honey, and in a short time afterwards but very few are to be seen. For several seasons in succession I imprisoned some of these fat specimens, and placed them in a northern aspect in cases of wood and earthenware, in which I placed rough pieces of old decayed bark of trees, &c. Several specimens lived through the winter: they appeared to be dead during cold weather, but after being in a warm room for an hour or much less I believe, they began to crawl about and expand the wings. If fine, that is very mild, weather sets in for a few days during the winter months these insects become quite active, endeavouring to escape from their prison. Who has not occasionally seen a specimen either in November, December or January? The female places her eggs on the buds of *Rhamnus Frangula*, just before they begin to expand, in the spring of the year. The larva is full grown by the beginning of July, and when not feeding rests on the midrib of the leaf, which is first covered with delicate shining silk. Old worn specimens of the perfect insect may be seen occasionally as late as the end of June."

Economy of Bryophila perla.

"I discovered a larva in tolerable abundance last spring, feeding on minute lichens, on our old walls, which turned out to be that of a beautiful little moth, *Bryophila perla*. The economy is singular. It lives in a tent during the day, and comes out to feed at night and on wet and dull afternoons. It has a room at the back of its tent also, in which it ultimately turns to a chrysalis."

Longevity of a small Lepidopterous Larva.

"About three or four years ago I found some very minute larvæ in silken cocoons, amongst some bran and old paper, in which I kept meal-worms. One of these larvæ lived in a glass phial for three years, as nearly as I can guess, having attached its cocoon to the bottom of the phial, so that I could see the creature from without. The cocoon was composed of silk, bran and paper, and fresh bran was occasionally put into the phial."

The name of the moth produced from this larva was not mentioned.

Memoirs read.

Mr. Pascoe read some descriptions of new genera and species of Longicorn beetles from Borneo, Malacca and China.

Mr. White read a description of a new Longicorn beetle, brought from Ceram by Madame Pfeiffer.

Mr. Westwood read a description of *Thaumantis Aliris*, a splendid new species of Morphidæ, from Borneo.

Mr. Baly read descriptions of two species of *Pseudomela*, a new genus of Chrysomelidæ.—*J. W. D.*

April 7, 1856.—W. WILSON SAUNDERS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—‘Entomologische Zeitung,’ Nos. 3 and 4, for March and April, 1856; by the Entomological Society of Stettin. ‘A Manual of British Butterflies and Moths,’ by H. T. Stainton, No. 2; by the Author. ‘The Entomologist’s Weekly Intelligencer,’ No. 1; by the Editor. ‘Journal of the Proceedings of the Linnean Society,’ Vol. i. No. 1; by the Society. ‘Proceedings of the Royal Society,’ Vol. viii. No. 19; by the Society. ‘The Natural History Review,’ No. IX.; by the Dublin University Zoological Association. ‘The World of Insects: a Guide to its Wonders,’ by J. W. Douglas; by the Author. ‘The Zoologist’ for April; by the Editor. ‘The Journal of the Society of Arts’ for March; by the Editor. ‘The Literary Gazette’ for March; by the Editor. ‘The Athenæum’ for March; by the Editor. ‘Papers and Proceedings of the Royal Society of Van Diemen’s Land;’ ‘Tasmanian Contributions to the Universal Exhibition of Industry at Paris;’ by the Royal Society of Van Diemen’s Land. Fifty copies of ‘An Address delivered at the Anniversary Meeting of the Entomological Society of London, held on the 28th of January, 1856,’ by Edward Newman, Mem. L. C. Acad. (nom. Latreille), F.L.S., Z.S., &c.; by the Author. A small box of remarkable Coleoptera, Hymenoptera, &c., from Ceylon, received from Mr. Thwaites, M.E.S.; by W. Spence, Esq.

Prize Essay for 1856.

The President announced that the Council had determined to offer a prize of £5, for an Essay on the Natural History of *Gelechia terrella*, and whether this common little moth was injurious to Agriculture or not. The Essay to be illustrated by figures of the insect in all its stages, and to be delivered on or before the 31st of December next.

Exhibitions.

Mr. A. F. Sheppard exhibited a specimen of *Ennomos Alniaria*, taken sitting on a post, near Margate, in September, 1855. This is the third specimen of this species known to have been captured in Britain.

The Nuisance of Acari.

Mr. Westwood read a note, addressed by a lady residing at Lyme Regis to Dr. John Lee, of Hartwell House, Aylesbury, and communicated by that gentleman, giving an account of the appearance in the writer’s house of a vast quantity of Acari. They proceeded, in the first instance, from some Egyptian palm-leaves which were

shut up in a dark closet, whence they spread through three rooms, and were seen in thousands in crevices of wood, on chairs, tables, books, paintings and cabinets of shells, so that they became a complete nuisance. Cold had no effect on them; and tobacco, turpentine, colocynth and Sir W. Burnett's disinfecting fluid had been tried as remedies, with but little effect. Sulphur and nitre had been more efficacious; but in consequence of their use the polish of the furniture and shells had been destroyed, and the colours of the paintings had been damaged.

Mr. Westwood thought the palm-leaves had probably been affected by *Ptini* or *Anobia*, whose excrement and the *débris* made by them had afforded a nidus for the *Acari*, in which they were for some time unmolested. He suggested as a cure the employment of corrosive sublimate in solution; but several members said that, however fatal this preparation of mercury was to insect life, it was also destructive to any metals with which it came in contact, as proved by the rotten state of the pins in insects and the wires in bird-skins which had been dressed with it, and a white film was deposited on the surface of anything to which it was applied.

The President said a case had come under his notice in which cockroaches had been destroyed in a drawing-room, under the floor of which they had taken up their quarters, by the use of chloride of lime; and he thought it possible this preparation might be of service in the case now under consideration.

Read the following note by Mr. Newman:—

On the Genus Synemon.

“There is scarcely a genus of Lepidoptera more interesting than the Australian-Synemon. With the general habit and abruptly clavate antennæ of a butterfly, it has other very important characters of a moth; and it will be fresh in the recollection of our Lepidopterists that our never-to-be-forgotten and most talented Secretary, Edward Doubleday,* wrote quite an Essay to show that it was a moth and not a butterfly. Well! I have gleaned a few more grains of information about *Synemon* from Mr. Oxley, who constantly saw it and often took it at the diggings. It is strictly diurnal, flitting about in the hot sunshine, among the tufts of grass and low scrub, with all the restless activity of a skipper: when it settles it rests for a minute with deflexed wings, but with the fore wings spread out nearly at right angles with the body, so as to display the more gaily-coloured hind wings. At night and in cloudy weather it rests on blades of grass, with the wings erect, meeting vertically over the back. Thus, in the combination of characters, these antipodeans unconsciously annihilate the distinction between butterflies and moths, between *Rhopalocera* and *Heterocera*: the gradations from *Hesperia* to *Synemon*, from *Synemon* to *Castnia*, from *Castnia* to *Sphinx*, and so on to the normal *Heterocera*, are easy and natural, and seem to bridge over the gulf which formerly existed in our minds between butterflies and moths.”

Specimens of two species were exhibited in illustration.

New Genera of Coleoptera.

Mr. Westwood read descriptions of two beetles especially remarkable for the lateral dilation of the head, a character of great rarity in insects. They would constitute

* See Appendix, by Edward Doubleday, to Lort's Discov. Austral i. 516.

new genera, and he described them under the names of *Enotiophorus vestitus* and *Triplacodes Guineensis*, the former from Ceylon, the latter from Guinea.

Mr. Stevens communicated the following note from Mr. H. W. Bates, Corr. M.E.S.:—

On the Sexual Distinctions in the South-American Coleopterous Genus Agra.

“ Lately I captured a pair, *in copulâ*, of a species of the genus *Agra*, and profited by the fortunate circumstance to examine if there were any external differences between the sexes. I found several characters very strongly marked, in fact so obvious that I think it scarcely possible they have escaped the notice of entomologists to the present time. The chief distinction is the pubescence of the under surface of the body in the male. Examining afterwards other species, with this guide, I have paired satisfactorily five or six. The amount of pubescence varies according to the species: whilst in one the central parts of the metasternum and all the abdominal segments are densely clothed with a thick woolly pile, in others the metasternum and basal segment of the abdomen only has a thick short erect pubescence. The other characters are less obvious, and chiefly comparative: one is the great thickness of the femora, especially the anterior, in the male; this character, however, is marked only in part of the species: another is the relative length of the apical abdominal segment, and the shape of the notch in its posterior edge. In the male this segment is shorter than in the female; the notch is deeper and more rounded; in the female it is always shallow and angular. The last character appears in those species in which each elytron is doubly sinuate at the apex: when this is the case the sinuation is stronger in the female, the central tooth being much more prominent than in the male. In one species I have noticed the male has only a single sinuation, whilst the female is doubly sinuate-truncate at the apex of each elytron.”

Society's ‘Transactions.’

Part 8, completing Vol. iii. n. s. of the ‘Transactions,’ was on the table.—
J. W. D.

NOTICES OF NEW BOOKS.

‘*Annals and Magazine of Natural History.*’ Nos. 98, 99 and 100, dated February, March and April, 1856; No. 98, *price* 5s., Nos. 99 and 100, *price* 2s. 6d. each. London: Taylor and Francis, Red Lion Court, Fleet Street.

No. 98 contains the following papers:—

‘*Notes on the Palæozoic Bivalved Entomostraca.*’ No. 3. Some Species of *Leperditia.*’ By T. Rupert Jones, F.G.S.

‘*Further Observations on the Development of Gonidia (?) from the*

Cell-contents of the Characeæ, and on the Circulation of the Mucus Substance of the Cell.' By H. J. Carter, Esq., Assistant-Surgeon H.C.S. Bombay.

'Amended Description of the Genus *Scaphula* of Benson, a fresh-water form of the Arcacea; with Characters of a New Species from Tenasserim.' By W. H. Benson, Esq.

'Description of *Tanystoma tubiferum*, a Burmese form related to the Genus *Anostoma* of Lamarck.' By W. H. Benson, Esq.

'On *Pleurodictyum problematicum*.' By William King, Professor of Mineralogy and Geology in Queen's College, Galway.

'On the Mechanism of Aquatic Respiration and on the Structure of the Organs of Breathing in Invertebrate Animals.' By Thomas Williams, M.D. Lond.

'On the Marine Testacea of the Piedmontese Coast.' By J. Gwyn Jeffreys, Esq., F.R.S.

'Notes on the Review of G. R. Gray's Catalogue of the Genera and Subgenera of Birds in the December Number of the Annals.' By G. R. Gray, F.L.S., &c.

Bibliographical Notices:—'A Popular History of Palms and their Allies ;' by Berthold Seemann, Ph. D. 'Museum of Economic Botany, or a Popular Guide to the Museum of the Royal Gardens of Kew ;' by Sir W. J. Hooker, Director. 'A Handbook to the Marine Aquarium ;' by P. H. Gosse. 'Popular Geography of Plants, or a Botanical Excursion round the World ;' by E. M. C., edited by C. Daubeny, M.D., &c. 'The Flowering Plants and Ferns of Great Britain; an attempt to classify them according to their Geognostic Relations ;' by J. G. Baker.

Proceedings of Learned Societies:—Zoological — Botanical of Edinburgh.

Miscellaneous:—Memorandum on the Animal of *Scissurella cristata*; by Lucas Barrett. Notes on the Marine Fauna of Weymouth; by William Thompson.

No. 99 contains the following papers:—

'On the House-Ant of Madeira.' By Professor O. Heer, of Zurich. Translated from the original by R. T. Lowe, M.A.

'Characters of seventeen New Forms of the Cyclostoinacea from the British Provinces of Burmah, collected by W. Theobald, jun., Esq.' By W. H. Benson, Esq.

'Descriptions of three newly-discovered Species of Araneidea.' By John Blackwall, F.L.S.

‘On some Species of *Epilobium*.’ By Charles C. Babington, M.A., F.R.S., &c.

‘On the Mechanism of Aquatic Respiration, and on the Structure of the Organs of Breathing in Invertebrate Animals.’ By Thomas Williams, M.D. Lond.

‘Notes on Permian Fossils: *Palliobranchiata*.’ By William King, Professor of Mineralogy and Geology in Queen’s University, Ireland.

‘On *Scissurella crispata*.’ By William Clark, Esq.

‘Further Notice of Piedmontese Mollusca.’ By J. Gwyn Jeffreys, Esq., F.R.S.

Bibliographical Notices:—‘The Natural History of the *Tineina*;’ by H. T. Stainton, assisted by Professor Zeller and J. W. Douglas. ‘*Sylloge Generum Specierumque Cryptogamicarum quas in variis operibus descriptas iconibusque illustratas, nunc ad diagnosim redactas, nonnullasque novas interjectas ordine systematico dispositas* C. Montagne, D.M., &c.’

Proceedings of Learned Societies:—Zoological—Botanical of Edinburgh.

Miscellaneous:—On the Earliest Stages in the Development of *Pelagia noctiluca*; by Dr. A. Krohn. [Extracted from Muller’s Archiv.] Description of a New Species of Swift.

The three spiders described by Mr. Blackwall belong to the tribe *Octonoculina*, and to the family *Linyphiidæ*: they are *Neriene cornigera*, discovered among moss growing under trees in a wood on the northern slope of Gallt y Rhyg, in the autumn of 1854: *Neriene montana*, found on Ingleborough, in Yorkshire, in September, 1855; it was received from Mr. Meade: *Walckenaëra vafra*, discovered under stones about Hendre House, near Llanrwst, in October, 1855. The new swift is the *Cypselus galilæensis* of Antinori, described in the *Naumannia* for 1855, and discovered by Antinori in Palestine, near the Sea of Galilee: it much resembles a previously-described South African species, the *Cypselus leucorrhous* of Stephens.

The contents of No. 100 are as follow:—

‘On the Theory of the Fecundation of the Ovum.’ By E. Claparède. [Translated from the *Bibliothèque Universelle de Genève*, for August, 1855, p. 284].

‘On some Species of *Epilobium*.’ By Charles C. Babington, M.A., F.R.S., &c. [Transactions of the Botanical Society of Edinburgh].

‘Note on the Genus *Scissurella*.’ By J. Gwyn Jeffreys, Esq., F.R.S.

‘On the House-Ant of Madeira.’ [Translated from the German of Professor O. Heer, of Zurich].

‘Notes on Permian Fossils: Palliobranchiata.’ By William King, Q.C., Galway.

‘Remarks on the Genera Tanystoma, Nematura and Anaulus.’ By W. H. Benson, Esq.

‘New Researches in Vegetable Embryogeny.’ By M. Tulasne. [Translated from the *Comptes Rendus*, November 12, 1855, p. 790].

‘On the Tracheal System of Insects.’ By Thomas Williams, M.D. Lond., F.L.S., &c.

Bibliographical Notice:—‘*Insecta Maderensis*;’ by T. V. Wollaston, M.A., F.L.S.

Proceedings of Learned Societies:—Bombay Branch Royal Asiatic—Zoological.

Miscellaneous:—On the Mode in which Tachinæ escape from their Pupa-cases, and from closed Situations in which they often occur; by Dr. Reissig. [Extracted from Weigmann’s *Archiv.* xxi. p. 189]. On the apparent absence of a Nervous System in *Nemoptera lusitanica*; by M. Léon Dufour. [Extracted from the *Comptes Rendus*, December 31, 1855, p. 1204].

‘*Quarterly Journal of Microscopical Science, including the Transactions of the Microscopical Society of London.*’ Edited by EDWIN LANKESTER, M.D., F.R.S., F.L.S., and GEORGE BUSK, F.R.C.S.E., F.R.S., F.L.S. London: Churchill. No. XV., dated April, 1856. Price 4s.

The contents of No. XV. are as follow:—

‘A Simple Form of Portable Microscope, with Lever Adjustment, which may be adapted to several different purposes.’ By Lionel Beale, M.B., Professor of Physiology and General Morbid Anatomy in King’s College, London.

‘Report of the Sixteenth Annual Meeting of the Microscopical Society.’

‘Further Observations on the Structure of *Appendicularia flabellum* (Chamisso).’ By T. H. Huxley, F.R.S.

‘Note on the Reproductive Organs of the Cheilostome Polyzoa.’ By T. H. Huxley, F.R.S.

‘On the Reproductive Organs of certain Fungi, with some Remarks on Germination.’ No. II. By Frederick Currey, Esq., M.A.

‘On the Similarity of Form observed in Snow Crystals, as compared with those of Camphor under certain conditions of Crystallization.’ By Joseph Spencer, Esq.

‘Further Observations on the Similarity of Forms observed between Snow Crystals and those of Camphor.’ By James Glaisher, Esq., F.R.S.

‘On an Easy Method of viewing certain of the Diatomaceæ.’ By John Charles Hall, M.D., Physician to the Sheffield Public Dispensary.

‘On defining the Position and measuring the Magnitude of Microscopic Objects.’ By the Rev. W. Hodgson, M.A., Incumbent of Brathay.

‘On the Development of the Enamel.’ By John Tomes, F.R.S., Surgeon-Dentist to the Middlesex Hospital.

‘Contributions to Micro-Mineralogy.’ By S. Highley, F.G.S., &c.

Reviews:—‘Rudiments of Pathological Histology;’ by Carl Wedl, M.D., &c., translated and edited by George Busk, F.R.S. ‘The Micrographic Dictionary; a Guide to the Examination and Investigation of the Structure and Nature of Microscopic Objects;’ by J. W. Griffith, M.D., &c., and A. Hensfrey, F.R.S., &c. ‘The Microscope and its Revelations;’ by William B. Carpenter, M.D., F.R.S., &c.

Notes and Correspondence:—The Proboscis of the Blow-fly; by G. Hunt. Aperture of Object-glasses; by F. H. Wenham. Application of Collodion to the production of Stage and Eye-piece Micro-meters for the Microscope; by W. Hodgson. Note on Pinnularia; Anonymous. On Micrometers and Micrometry; by George Jackson. Mr. Amyot’s Finder; by Thomas E. Amyot.

Proceedings of Societies:—Microscopical.

I am fortunate in being enabled, through the kindness of Mr. Busk, the talented editor of this Journal, to explain the seemingly irregular numbering of the Plates. The ‘Journal’ is not a Journal exclusively, but consists of three separate works, which are in the course of publication simultaneously, piecemeal, and bound together; in fact, of three stout gentlemen rolled into one. Each work requires a separate series and numbering of Plates, and there were plates belonging to each work in the number last noticed: the VX Mr. Busk believes a misprint, and thinks it should have been IX.

'Journal of the Proceedings of the Linnean Society.' Vol. I. No. 1, dated March 1, 1856. 8vo, 96 pp. letter-press, two Plates. Price 3s., to Fellows gratis. London: Longmans. 1856.

The Linnean Society has been roused, by its able, active and amiable President, from that state of *coma* under which it seemed for years to have been labouring: discussions at its meetings are now not only tolerated, but invited; papers of great interest are not only read, but listened to; and, wonder of wonders! a resolution has been passed in Council to issue a quarterly number of Proceedings.

The first number of this Journal is remarkable for the value of the papers, for the clearness with which they are arranged, and the correctness with which they are printed: it is creditable alike to the Society from which it emanates and to the literary and scientific abilities of the various contributors. It supplies a great desideratum in Science, and, if continued as begun, will supersede the necessity for any other Journal taking the same highly scientific ground. The papers are divided into zoological and botanical: the following are the titles of the zoological:—

‘On the Katepo, a supposed Poisonous Spider of New Zealand.’ By T. S. Ralph.

‘Remarks on some Habits of *Argyroneta aquatica*.’ By Thomas Bell, Esq.

‘Catalogue of the Dipterous Insects collected at Singapore and Malacca by Mr. A. R. Wallace, with Descriptions of New Species.’ By Francis Walker, Esq., F.L.S.

‘Note on a supposed Species of *Pelopæus*.’ By Edward Newman, Esq., F.L.S.

‘On the Natural History of the Glowworm.’ By the late George Newport, Esq., F.L.S.

'The Natural History Review.' Nos. IX. and X., dated January and April, 1856. Price 2s. 6d. each. London: Williams & Norgate.

The contents of No. IX. are as follow:—

Reviews:—‘Untersuchungen ueber die Fluegel typen der Coleopteren;’ von Prof. Dr. H. Burmeister. — Part I. Clavicornia.

‘Glaucus, or the Wonders of the Sea-Shore;’ by Charles Kingsley. ‘The Natural History of the Tineina;’ by H. T. Stainton. ‘The Fern Allies;’ by John E. Sowerby. ‘Entomologist’s Annual for 1856.’ ‘Geology, its Facts and Fictions;’ by W. Elfe Taylor. ‘Experiments on the Dyeing Properties of Lichens;’ by W. L. Lyndsay. ‘The Flowering Plants and Ferns of Great Britain;’ by J. G. Baker.

‘Address to the Dublin University Zoological Association.’ By the President, R. Ball, LL.D., M.R.I.A., &c.

‘On the Affinities of the Aphaniptera among Insects.’ By A. H. Haliday, A.M., M.R.I.A.

‘On some Rare Fresh-water Mollusca.’ By E. Waller.

‘Notes on the Larva of *Octhebius punctatus* and *Diglossa mersa*.’ By A. H. Haliday, A.M., M.R.I.A.

Notices of Serials:—‘The Annals and Magazine of Natural History.’ ‘Quarterly Journal of Microscopical Science.’ ‘The Zoologist.’ ‘Hooker’s Journal of Botany, and Kew Garden Miscellany.’ ‘The Naturalist.’ And Notices of the Serials of North America, Russia, Sweden, Germany, Switzerland, Holland, Belgium, France, Italy and Prussia.

Proceedings of Societies:—Dublin University Zoological Association.

The contents of No. X. are as follow:—

Reviews:—‘Popular History of Birds;’ by A. White. ‘Popular British Conchology;’ by G. B. Sowerby. ‘Popular British Entomology;’ by M. E. Catlow. ‘Popular History of British Zoophytes;’ by the Rev. Dr. Landsborough. ‘March Winds and April Showers;’ by “Acheta.” ‘May Flowers;’ by “Acheta.” ‘Handbook to the Marine Aquarium;’ by P. H. Gosse. ‘Contributions to the Natural History of Labuan and Borneo;’ by J. Motley and L. L. Dillwyn. ‘Zetterstedt, Diptera Scandinaviæ. ‘Stenhammar, Copromyzinæ Scandinaviæ.’ ‘Henrich, Das Leben in der Natur.’ ‘Structure of Victoria Regia;’ by G. Lawson.

Miscellaneous Notices.

‘Ova of *Hylus*.’ By Dr. Lamprey.

‘Larvæ infesting the Horns of *Oreas Canna*, &c.’ By A. H. Haliday, Esq., A.M., M.R.I.A., V.P. Dublin University Zoological Association.

‘Occurrence of the *Uria Lacrymans* in Ireland.’ By A. Carte, Esq., M.B., A.M., Director of Museum R.D.S., M.R.I.A.

- ‘Letter from Dr. Kinahan, dated Callao, August, 1855.’
- ‘Occurrence of Rare Birds in Ireland.’ By Dr. Burkitt.
- ‘On the Veddahs of Ceylon.’ By Dr. Lamprey.
- ‘Celtic Names of the Water-Newt.’ By T. O’Mahony, Esq., A.B., Treasurer Dublin University Zoological Association.
- ‘Extracts from my Diary.’ By Capt. M’Clintock, R.N.
- ‘Report of the Council of the Dublin Natural History Society, 1855.’

Notices of the Serials of Germany, France, and Britain.

Piscivorous Propensity of the Water Campagnol.—Under this heading I see it stated that the water vole has been observed to feed on fish. Might it not have been a common gray rat, which was mistaken for a vole? The common rat is as numerous in the streams in this neighbourhood as the true water rat, for which it is often mistaken, swimming and diving equally well with that animal.—*W. S. M. D’Urban; Newport, near Exeter, February 5, 1856.*

Occurrence of the Round-headed Porpoise (Delphinus melas) at Oldcambus.—On Saturday, March 29th, 1856, a large marine animal came ashore among the rocks of Greenheugh, a short way to the west of St. Helen’s church. This was ascertained to be a round-headed porpoise or ca’ing whale. The species frequents in great droves the coasts of Shetland and other northern islands; and as the blubber is highly valued, the animal is the source of much profit, as well as sport to the inhabitants, who with their boats environ those bodies of them that are so luckless as to venture within the deep landlocked bays, and then pursue them till they run aground. It is, however, extremely rare on the Berwickshire coast, there being no previously recorded instance of its appearance here; but a shoal of the same sort of miniature whale, in various stages of growth, was stranded on the 19th of March, 1854, at Howick Burn Foot, in Northumberland. The dimensions of the present individual (which was a male) were greater than any of those observed on that occasion. Its length was 20 feet, and its greatest girth 11 feet. The head was elevated in front, short and rounded, with a deepish transverse depression above the thick upper lip. The mouth was small, the opening being only 15 inches in length. It was armed with twenty-two sharp recurved conical teeth in each jaw, none of them exceeding three-fourths of an inch in length. The crescent-shaped blow-hole was seated in a cavity on the summit of the head, and was distant 22 inches from the top of the snout, or 2 feet 10 inches from the tip of the upper lip. The eyes were 1 $\frac{3}{4}$ inch in diameter, and were 1 foot 9 inches from the mouth. The two paddle-fins were long, narrow and tapering; in length 4 feet 11 inches; in breadth, at the root, 1 foot 2 inches; and their distance from the snout 2 feet 11 inches. The single subtriangular back fin was blunt at the apex, the hinder edge sinuated, projecting considerably near the middle: it was 3 feet 9 inches long and 17 inches high, and it was situated 5 feet 8 inches from the snout. The horizontally flattened tail was of a triangular form, and was divided by a blunt notch into

two lobes: its breadth across was 4 feet 7 inches. The smooth unwrinkled skin was of a uniform glossy black, excepting a narrow band of drab colour along the belly, that terminated abruptly in front of the paddle-fins. The blubber was from 1 to 4, and even 6 inches thick. The flesh was very dark in colour, and resembled coarse beef. The animal was cut up on Monday, and, after the blubber had been separated, the carcase was conveyed away for manure. After one side had been stripped of its blubber, it was with difficulty turned over by the efforts of two horses, one attached to the tail, and the other to one of the paddle-fins, with four men besides to assist. Apparently it had not been long dead previous to its discovery, there being no traces of corruption. As to the cause of its death, it may be conjectured, that having got entangled among the rocks it may have been unable to effect its escape; but there are no traces of any struggle having occurred on the spot where it lay, nor did it bear any external mark of violence sufficient to account for its fate. The sea for some time previous had been calm. A much smaller animal of the same sort has also come ashore in the vicinity of Thorntonloch, in East Lothian. As our knowledge of the Cetacea that frequent our sea-coast is very limited, it is most desirable to have a minute account of all animals of this description that may from time to time fall under observation, for doubtless the varieties are much more numerous than most people are aware of. Naturalists are indebted to the late Dr. Patrick Neill for having pointed out the characters that distinguish this species from the Grampus, which it much resembles, and with which it is often confounded.—*James Hardy; Penmanshie, by Cockburnspath, N.B., April, 1856.*

Occurrence of the Whitetailed Eagle (Falco albicilla) in Devonshire.—A few weeks ago I saw a fine living specimen of the whitetailed eagle, which was captured in the following curious manner:—As two men were at work felling trees, near Holsworthy, in North Devon, about the beginning of January, their attention was attracted by a loud rustling amongst some furze near them, and, turning round, they perceived the eagle lying with its wings extended on the top of a furze bush, unable to rise. They flung a hatchet at it, but, missing it, walked up to it, and each seizing the tip of a wing carried it home, and have since been exhibiting it in Exeter and other towns, and it is now I believe at Plymouth.—*W. S. M. D'Urban; Newport, near Exeter, February 5, 1856.*

Honey Buzzard breeding in Britain.—I venture to bring to the notice of Mr. A. F. Sealy what I consider to be another instance of the honey buzzard breeding in this country; and, though I have no proof positive to adduce, I think the circumstantial evidence of the case very convincing. In the summer of the year 1841, a game-keeper, in the employ of a gentleman whose estate lay in the Shropshire side of Staffordshire, shot a large hawk on her nest, which was situated in a tree on the outskirts of an extensive wood. The man took the bird, and two eggs which he found in the nest, to his mistress, who prided herself on her ornithological knowledge; and accordingly, after consulting a very ancient copy of Bewick's 'British Birds,' she pronounced the bird to be a fine goshawk, placed the eggs in her cabinet, and forwarded the hawk to a neighbouring gentleman, who was in the habit of preserving the skins of rare birds: he was unfortunately from home at the time, and before he

returned it had been thrown away by the servants. Now in size, in the colour of the irides and legs, and in the general markings of the plumage, a female honey buzzard is not unlike a goshawk, and might easily be mistaken for one by a superficial observer. On seeing the eggs some short time after they were taken, and knowing from their colour that they could not possibly be what the label asserted, I made further enquiries, and learned from the keeper that about a month after he had killed the first, he shot a second hawk, which he took to be the cock bird, and which had always remained in the vicinity of the nest: he described it as being very handsome, with a great deal of *white* about it, and added that he had never seen anything like it before or since. Sad to relate, this valuable bird, which would have been a prize to any Museum, went to ornament the back of a barn. The eggs, which are now in my possession, agree exactly with the dimensions given by Mr. Yarrell for the egg of the honey buzzard: in colour they resemble that of the kestrel; perhaps they are rather darker than most eggs of this bird, and when fresh they were much brighter than they are at present. I know of no other hawk except the peregrine falcon — and this bird does not breed inland — which produces eggs of this size and colour; and therefore, if I am wrong in calling my eggs those of the honey buzzard, will some of the readers of the 'Zoologist' suggest what they may be? — *C. Buchanan; Hales, Market Drayton, April 12, 1856.*

Early Arrival of the Willow Wren. — March 20, 1856, 1 o'clock, p. m.; wind N.W.; therm. 51°. Observed five or six chiffchaffs near Steephill, about half a mile from this place. They were flying in and out of the hedges, and occasionally into the larger trees. I had a momentary view only of a yellow wood wren. I also give, from my note-book, the dates, showing when they were first observed in former years by me; also extracts from White's 'Natural History of Selborne,' Montagu's 'Ornithological Dictionary,' and Macgillivray's 'British Birds.'

Extract from Capt. H.'s Note-book.

Ventnor, Isle of Wight:—

1852.	April 4,	observed first willow wren.
1853.	„ 7,	„
1854.	„ 11,	„
1855.	„ 17,	„

White.

"Willow wren or chiffchaff" "is usually first heard about the 20th March."

Montagu.

"The wood wren appearing with us about the latter end of April." "Yellow wren comes to us early in April."

Macgillivray.

Short-winged wood wren or chiffchaff: "It arrives about the beginning of April."

It would therefore appear that, notwithstanding the severe weather that has prevailed of late, the wood wren has this season arrived unusually early. — *H. W. Hadfield; High Cliff, Ventnor, Isle of Wight, March 20, 1856.*

Note on the Early Arrival of the Sand Martin and Chiffchaff.—On the 18th of March I saw two sand martins (*Hirundo riparia*) flying over the river, one of which I shot, and found it in good condition and its mouth full of Dipterous insects. The same day the chiffchaff (*Sylvia hippolais*) was very numerous. The weather was mild and wet, being nearly the first rain after a long continuance of fine weather with cold easterly winds. This is the earliest arrival of either of these birds I have ever noticed, though last year I saw one sand martin flying about on the 23rd of March, whilst snow was falling, chiffchaffs having arrived on the 21st.—*W. S. M. D'Urban; Newport, near Exeter, April 2, 1856.*

Familiarity of the Hedgesparrow.—May 8, 1852. A pair of hedgesparrows have constructed their nest within 2½ feet of the back of a garden-chair in common use, and on which a boy once stood to water a shrub without disturbing the bird sitting on its nest, which is placed in a blackthorn, with ivy growing around it, the leaves of which form a complete canopy, sheltering it from rain and wind. The eggs slightly differ, both in size and shape. The nest measured internally 1½ inch in depth and 2½ inches in breadth, and was 4½ inches in diameter externally. On taking the nest to pieces (some weeks later) I found it composed of the following materials:—twig of elm; ditto; stalk of spinach; piece of thorn; piece of tamarisk; stalk of carnation; stalk of honeysuckle; root of ivy; piece of brier; tendril of *Convolvulus*; stalk of flower; ditto; ditto; piece of Virginia stock; stalk of flower; ditto; ditto; some stalks; a number of fine roots; some pieces of matting; piece of round gimp; some ivy leaves; two or three leaves of mallows; two pieces of twine; several strings; several threads; four long pieces of cotton twist: externally, first a thick coating of common green moss, mixed with a little wool, hair, and small roots and leaves; next a thick mass of short hair, mixed with wool, worsted, rabbits' fur, human hair, and that of cow or ox, and a small feather or two: the whole matted together with fibrous roots, grass, hair, and threads of worsted and cotton, and lined with a moderately thick coating of horse hair, and that of a dog or cat.—*H. W. Hadfield; High Cliff, Ventnor, Isle of Wight, April 10, 1856.*

Colour of the Beak of the Hawfinch.—Mr. Drane states (Zool. 5059) that the bill of the hawfinch changes colour when the bird is fed upon hemp seed: this is an error. The food has nothing to do with it; it is simply the regular seasonal change. In the autumn and winter the bill, in both sexes, is always flesh-coloured; in March it begins to change, and by the early part of April is of a deep leaden blue colour, and continues so during the breeding season. The common sparrow is a familiar instance of this change in the colour of the bill, which is horn-coloured in winter and jet-black in summer. The hawfinch is not migratory in this country: it used to breed in great numbers in our forest, but has become comparatively rare within the last three or four years. Like many other birds which are very wild in a state of nature, it becomes very familiar when brought up from the nest.—*Henry Doubleday; Epping, April 8, 1856.*

Note on the Hoopoe.—The hoopoe is placed by Macgillivray in the family of Certhianæ (why or wherefore does not clearly appear). He also describes them as feeding on beetles “which they first killed, and then beat them into a ball, which they threw into the air and caught *lengthwise*.” He likewise errs in saying “The form of its tarsi and claws would lead us to suppose it to be a climbing or creeping bird.” Again, “Its very short tarsi are obviously not well adapted for walking, &c.” Although a great admirer of Mr. Macgillivray's works (which I have generally found very correct),

I beg to assert that the hoopoe can not only walk, but walk well; and as seen on the ground, when feeding, is one of the most elegant-looking birds that can be conceived, erecting its crest when disturbed or alarmed. During three years that I passed at Trichinopoly and in the neighbourhood (where they were very abundant), I never remarked one either climbing or creeping up a tree, and do not think it possible it could have escaped my notice had they done so; but when disturbed they would fly into the trees, but were by no means wild. On one of my voyages from India, when about 500 miles from the western coast of Africa, several birds flew on board,—amongst the rest a hoopoe. The wind was off the land, and came surcharged with fine yellow sand. Hoopoes have been frequently seen in the Undercliff, and might possibly breed here if allowed to do so, but they no sooner make their appearance than they are shot or scared away. The first I ever heard of was shot by my father, in an orchard at Bonchurch, about the year 1814, and presented by him to Mr. Bullock: it was subsequently transferred to the British Museum.—*H. W. Hadfield; High Cliff, Ventnor, Isle of Wight, April 10, 1856.*

Observations on the Genus Testacellus, and Description of a New Species, Testacellus Medii Templi. By THOMAS TAPPING, Esq.

Class PULMONIFERA.—Order TERRESTRIAL.—Genus TESTACELLA.

It is my good fortune to add a British species to that interesting family of testaceous pulmoniferous mollusks known as Testacellidæ.

Before describing the species, the subject of this communication, it may be convenient to shortly state the history and generic and special characters of these remarkable animals.

History.

This genus appears to have been first noticed by M. Dugué, in a garden at Dieppe, in 1740; after which it does not seem to have attracted much attention until M. Maugé, some years since, brought home specimens from Teneriffe. The genus has been founded on the species *Testacella Haliotoidea* of Faure Biguet, described by Cuvier in the 'Annales du Museum,' Vol. v. Cuvier ('Mémoires pour servir à l'Histoire des Mollusques,' ed. 1817, tit. Mem. sur la Dolabelle, sur la Testacelle, &c., &c.) gives the following as the history of the last-mentioned genus:—"La testacelle avoit été indiquée depuis long-temps. D'Argenville et Favanne en avoient donné la figure sous le nom de limace à Coquille—Linnæus et même Gmelin l'avoient néanmoins négligée dans leurs énumérations. J'en fis, le premier, un genre à part dans les tableaux, qui sont à la fin du premier vol. de mon Anatomie

Comparée, le genre et le nom furent adoptés par M. Lamarck (An. sans Vert. p. 96) et par M. Bosc (Hist. Nat. des Coquilles, iii. 240) mais il est singulier que ces deux savans naturalistes n'aient cité que des espèces étrangères, comme des Ténériffe et des Maldives, tandis qu'il y en a une très abondante dans nos provinces meridionales. C'est ce qu'a fait connoître M. Faure Biguet observateur zélé et habile, résidant à Crest, département de la Drôme ('Voyer le Bulletin des Sciences,' No. 61, pour Germinal an X). C'est d'après lui qu'en a parlé Draparnaud dans son 'Tableau des Mollusques de la France,' p. 99: et c'est également à sa générosité que je dois le plus grande nombre des individus que j'ai été à même d'examiner; je m'empresse de lui en témoigner ici mon vive reconnaissance."

During the last few years this genus has received great attention from various Englishmen,—from Mr. Baker, of Stamford Hill; from Mr. Lukis, of Guernsey; and particularly from Mr. G. W. Sowerby, of London, to whom zoologists are considerably indebted; the latter gentleman having established a new British species, *T. Scutulum*. (See Loudon's Mag. Nat. Hist. vi. 45, and vii. 224).

In the collection in the British Museum the family of the Testacellidae is placed after the Cryptellidae and before Plectrophorus.

Testacellæ live for the most part under ground, sometimes at the depth of three feet. During fine weather, however, they may be found near and upon the surface. They are rapacious, feeding upon worms, which they swallow head foremost, and gradually draw in as digestion proceeds. (Encylop. Metrop. tit. "Testacella"). As a general rule members of this genus do not hibernate, although during cold weather they are in an almost torpid state. (Loudon's Mag. Nat. Hist. vi. 228).

Generic Characters. (Cuv. iii. 39).

Animal elongated, slug-like, cylindriform, acuminated at each extremity; no cuirass; head distinct, furnished with four intractile tentacles, of which the posterior are the longest and carry the eyes on the tips; foot long and rather indistinct, but extends on each side beyond the body; pulmonary aperture round, and, being dependent on the protecting shell, is situate at the posterior fourth of the animal's length; the orifice being placed entirely backwards, under the right side of the apex of the shell, the anal aperture is very near it; organs of generation united, and showing their orifice near and behind the great right tentacle. From the manner in which the blood is

aërated, the auricle and ventricle are placed longitudinally, the latter being anterior.

Shell external, very small, solid, auriform, depressed and slightly spiral at the apex, having a very large and oval aperture; the right lip simple and trenchant, the left convex, sharp and reflected; the shell covers the posterior part of the pulmonary cavity.

The genus has in its form and size much resemblance to a small slug, but is distinguished from it by the cloak, which is very extensible, being placed far back on the body, contained in a very small shell, *and by two grooves which pass from the base of the tentacles to the shell*; its branchial and anal apertures are also near the tail, instead of, as in the slugs, being near the fore part.

De Féüssac remarked that the simple gelatinous contractile mantle of the animal, hidden habitually under the shell, is divided into many lobes, capable of enveloping the whole body, by an extraordinary development, when the animal finds it necessary to protect itself from the consequences of too great dryness. The Encyclop. Metrop. tit. "Testacella," probably alluding to the same fact as De Féüssac, states that "during draught they are capable of distending the cloak and almost enclosing the *little shell*." These words, "little shell," must, I imagine, be an error.

Species.

The number of species given by Lamarck is one only; M. Deshayes, in his 'Tables,' makes the number two (both recent); one only is recorded in the last edition of Lamarck; Mr. G. B. Sowerby figures and describes three.

Special Characters.

T. haliotoideus, *Faure Biguet*.

Animal.—Flavidum rufum, vel griseum, maculatum aut immaculatum; tentaculis cylindricis.

Testa.—Ovata, postice acuminata, cornea, crassa, extus rugosa, intus nitida: clavicula (inner lip, *G. B. Sowerby*) alba lata et plana. (Loudon's Mag. Nat. Hist. vii. 229).

The physiology of this species is treated at large by Cuvier, in his *Mem. sur la Dolabelle*, supra.

Habitat.—South of France and Clifton. (Encyclop. Metrop. tit. "Testacella.") La France, Cuv. par G. Méneville (Mollusques),

p. 13, 'Memoires sur la Dolabelle,' &c., supra. St. Bernard. Montpellier. (Brit. Mus.)

Figures.—This species is figured in Encyclop. Brit. Vol. xx. pl. ccclxxvii. ; Cuv. Icon. du Règne Animal. Moll. 5. ; Cuv. An. Kingd. 348, ed. 1840 ; Cuv. 'Memoires sur la Dolabelle,' &c., contains a series of six or eight figures of the physiology of this species ; Féruccac's 'Histoire,' pl. 8, figs. 5—9 ; and two views of its shell are given in Sowerby's 'Genera of Shells.'

T. Maugei, Féruccac.

Animal.—Rufescens, maculis brunneis sparsis ornatis ; tentaculis filiformibus ; ora corporis aurantia.

Testa.—Ovato-elongata, fulva, exilis, striatula ; spira elevata : clavícula angusta. (Fér. Hist. Vol. i. 94, t. viii. figs. 10, 12 ; Sowerby, Gen. No. 1, figs. 7 to 10 ; Loudon's Mag. Nat. Hist. 229).

Habitat.—Teneriffe, but has been found in gardens at Bristol by Mr. Miller. Supposed by Mr. Sowerby to have been imported from abroad. (Loud. Mag. Nat. Hist. vi. 45).

Figures.—This species is figured in Encyclop. Metrop. Vol. vii. ; Pen. Cyclop. tit. "Testacella;" in Encyclop. Brit. Vol. xv. pl. ccclxvii. ; in Sowerby's 'Genera of Shells,' in Féruccac's 'Histoire,' p. 8, figs. 10—12 ; and in Encyclop. of Agriculture, ed. 2, 1121, § 7706.

Habits.—“It feeds upon earth-worms, having the power of elongating its body to such a degree that it is able to follow them in all their subterranean windings. We have observed them attentively, and were rather surprised that an animal generally so extremely sluggish in its motions, after discovering its prey by means of its tentacula, thrusting from its large mouth its white crenulated revolute tongue, should instantly seize upon, with extraordinary rapidity, and firmly retain an earth-worm of much greater size and apparent force than itself, but which by its utmost exertion is unable to escape.”—Pen. Cyclop. xxiv. 246.

T. Corneus, M. de Roissy.

This species is mentioned, but not described, in Loudon's Mag. Nat. Hist. vii. 224.

T. Costatus, M. de Roissy.

This species is mentioned, but not described, in Loudon's Mag. Nat. Hist. vii. 224.

T. —— *From a correspondent of the 'Penny Magazine.'*

The description given in the above work is so general that it is impossible to ascertain therefrom whether the animal described is of a species known or unknown to science. As, however, the notice, such as it is, may be acceptable, it is here given at length.

"The shell slug of which the above is a representation was recently (April, 1835) found in a garden in Gloucestershire. When at its full length, it measured from an inch and a half to two inches. The upper part of its body is of a pale colour, very thickly marked with exceedingly minute black spots, which unite in an irregular manner; and on the back are three dark stripes, which are more distinctly visible in some individuals than in others; and it is altogether much darker when collapsed, the light colour almost entirely disappearing. The under part of the body is of a bright salmon-colour, more vivid in some specimens than in others. The greatest peculiarity in this slug is a small shell, resembling some of the smaller limpet shells, which covers the hinder end of the body: what purpose so small a shell answers, as the slug as not the power of retiring into it, we have not as yet a sufficient acquaintance with its economy to be able to determine. The shell, when separated from the slug, is semi-transparent. While in its natural position, its colour appears nearly the same as that of the back of the slug."

Habitat. — "These slugs are found in gardens in Gloucestershire, about eight or ten inches below the surface of the ground; and they feed on earth-worms. A worm an inch in length, which was placed, in a box covered with glass, with three of these slugs, soon fell a prey to one of them; but a worm three inches in length writhed so violently when seized that it succeeded in getting away. Afterwards it probably became impeded in its movements by the slime of the slugs, for in a few hours they had devoured it, as well as two others of nearly equal length. It was observed that two of the slugs made their repast at the same time at the two extremities of one of the worms. These slugs appear to have been only lately discovered, and very little is at present known of their habits." — *Penny Mag.* iv. 152.

T. *Scutulum*, *G. B. Sowerby*.

Found best from August to November.

Animal. — Bears a near resemblance to *T. haliotoideus*, not having

the double row of tubercles running from the head to the anterior part of the shell, so conspicuous in *T. Maugei*.

Testa.—*Ovata*, antice *palum acuminata*, *extus plana*, *clavicula arcuata elevata*. (Loudon's Mag. Nat. Hist. vii. 229).

The colour of this species, Mr. Lukis says, is generally of a sickly yellow spotted with brownish specks, mixed with pale orange along the lower parts. This species, Mr. Blair remarks, is of a dirty yellow hue, and *T. Maugei* differs from it in having its back of a dark brown colour, and in the more cylindrical form of its shell.

Mr. Sowerby thinks that *T. Scutulum* is identical in species with those sent by Mr. Lukis from Guernsey. (Loudon's Mag. Nat. Hist. vii. 224). Mr. Lukis was acquainted with his species so early as 1801.

French naturalists suppose (as remarked by Mr. Sowerby) the English *T. Scutulum*, with which they possess almost no practical acquaintance, to be identical with the *T. haliotoideus* of Faure Biguet and described in Féruccac's 'Histoire,' and to which indeed it is most closely allied, but differs in the form of its shell.

Habitat.—Discovered by Mr. Blair at Stamford Hill, London; by Mr. Sowerby in a garden in Kennington Road, Lambeth; at Notting Hill Terrace, London; was not rare in the kitchen and forcing gardens at Kensington, and in other places in the neighbourhood of London; and may, in the opinion of Mr. G. B. Sowerby, be considered as a native of this island.

Habits, &c..—Mr. Blair, of Stamford Hill, near London (Loudon's Mag. Nat. Hist. vi. 43), watched this slug for four years with considerable interest. That gentleman observed that they were generally to be found near the greenhouse, and were seldom seen more than fifty yards from it. He described it to be of a dirty yellow colour, and, when crawling on the surface of the ground, to be about three inches in length, and furnished with a small rudimentary shell at the tail end.

Mr. Blair thus continues his observations:—"In winter it buries itself from one to two feet deep in the earth, and appears on the surface of the ground occasionally with other species; but from the time of my first observing it until the present I have never seen it feeding on any species of vegetable. One morning last spring, on passing a narrow border, which had been previously watered with lime water, for the purpose of destroying slugs, I observed several of the yellow species amongst others dead, and close beside, or near the head of several of them, lay a dead worm. The man who performed the

watering informed me that the worms had been disgorged by the slugs. One slug was considerably larger than the others, in which, on cutting it open, I found a large worm. During fine mild weather I observed one on the surface of the ground, firmly fixed to the middle of a large worm, the head of the slug being so buried in it that it appeared to be nearly cut in two: it appears to me, however, that they generally contrive to seize them by one end; otherwise it would be difficult to swallow them whole, as they do; and I think there is no doubt that they generally get hold of them under ground, as the one above mentioned had most likely been dragged to the surface by the worm. I determined, however, to watch its motions, but a heavy rain coming on prevented me, and when the shower ceased they had both disappeared.

"A few days ago one was turned up with a spade, having hold of a worm by the head, with about half an inch of it swallowed. The worm appeared quite alive and strong, and turned the slug over with every twist of its body. The slug kept its hold for some time, but ultimately quitted it, probably in consequence of being disturbed. In digging up the specimens one of them was cut with the spade, in which a small slug was found of the common species."

This species has been observed never to feed on vegetables. It is very tender, and was seldom found by Mr. Blair away from the greenhouse.

Figures.—This species is figured in Loudon's Mag. Nat. Hist. vi. 45, and vii. 224; and in Sowerby's 'Genera of Shells.'

T. Ambiguus, Féruſſac.

Animal.—(Unknown).

Testa.—Depressiuscula, fragilis, subtiliter striata, pallide viridis; spira indistincta; apice occultata; apertura amplissima, simplici.

Mr. Sowerby does not consider *T. Ambiguus* a species, inasmuch as the shell has every appearance of an internal one.

T. Medii Templi, Thomas Tapping.

Animal.—Flavidum rufum, maculatum multis brunneis labeculis, tentaculis quatuor nigris et cylindricis.

Testa.—Fusca, exilis squamea, fragilis, subtiliter striata; apice occultata; apertura amplissima.

This species, which I propose to call *T. Medii Templi*, from the gardens in which it was discovered, is of a bright yellow, dusted over with minute brown specks which are scarcely visible. It is slug-like,

and the individuals are all at least three inches long. Some of the individuals are darker than the others; some have one furrow, and others two furrows, extending from the shell to the anterior part of the body: each has four tentacles, the two posterior carrying the eyes. The animal has the power of so porrecting the lip as to lead a superficial observer to suppose the animal has six tentacles.

The shell is small, of a dark brown colour, much darker than any part of the animal; it is but faintly striated, and scarcely more than a mere scale. In shell this species is more like *T. haliotoidea* than *T. Maugei*, the shell of the latter being deeper and better developed.

Owing to the ignorance of naturalists as regards the special distinctions of this interesting family, it may be that some of the species described in this paper are identical with *T. Medii Templi*; but, so far as descriptions and an inspection of the shells of *T. haliotoidea* and *T. Maugei* in the British Museum go, this certainly is a species new to science.

I agree with Mr. Sowerby that this family is very tender, all having been found in sheltered situations and on a warm soil. They are mostly found in the neighbourhood of greenhouses. My observations have led me to the fact that they frequent dry, porous, rich and loamy soils (such as Lambeth, Kennington, Kensington, and the Middle Temple Gardens), and are not to be found in stiff, clayey soil.

Habitat.—The gardens of the Honourable Society of the Middle Temple, London. It is found in one part of the gardens only, under the protection of a south-west wall. It has been known to the intelligent gardener, Joseph Dale, for the last ten years. This is truly a British species, as the garden is not manured with foreign manures, and is in so secluded and surrounded a spot that it cannot have been accidentally or recently introduced.

Habits.—The attention of the gardener was first directed to this species by the fact that on turning up the soil he brought to the surface a slug, with a portion of a worm sticking from out its mouth. Being struck by the singularity, as he considered, of this fact, he deposited the slug in a glass vessel to observe it. On the following day he found the slug had gorged the worm entirely. Since that period he has constantly turned up similar slugs; and on mentioning the fact to me he procured me seven specimens, about the end of December last. They were all found together, and in a semi-torpid state, under the south-west side of a high wall. I am informed that though they for the most part are found under ground, yet occasionally they visit the surface.

I have kept these animals for some weeks in a glass vessel ; and though at first they greedily devoured all the worms put with them, yet now, owing, I suppose, to the long confinement, they refuse them. On a future occasion I will communicate further on this subject.

THOMAS TAPPING.

9, Inner Temple Lane, Temple,
March 10, 1856.

Note on Atypus Sulzeri.—I had no intention of writing anything more about the spider; but, seeing a note on *Atypus Sulzeri* in the 'Zoologist,' I send the following remarks. In a note on *Atypus Sulzeri*, the writer, Captain Hadfield, supposes this spider to "break through the walls of its residence each time it captures a worm." Now, I mentioned the occurrence of a worm having thrust its head through the nest in a solitary instance, as indicating the kind of food which might occasionally fall to the lot of the spider, and not, as a settled point, to be the only food which she obtains. The worm which had thus obtruded itself was a very slender kind, about $2\frac{1}{2}$ inches in length, and I have no doubt that its head was very pointed, and therefore the creature would find no difficulty in piercing the "closely woven" sides of the silken tube; nor in doing so would it follow that a particle of sand was carried in to "soil the white carpet-like lining;" so that there would be no fragments to "sweep up," nor would any repairs be required, as not a thread, in my opinion, would be broken. I think in one of my notes the probability of the spider having hibernated was suggested, but accompanied with a doubt of that being the case at so early a period. Now, if the closed state of the nests is a proof of the spider having taken up winter quarters, we may hope, at other periods of the year, to discover a permanent opening, I should think, beneath the exposed end of the nest, and not at the lower extremity, or at the sides; for in that case she would have to make a ladder of the long tube to climb up by, which seems to me not a likely mode of procedure. It was not supposed that the history of *A. Sulzeri* was yet completed, especially as respects its food and mode of capturing it, as to whether she remains quietly at home or quits her nest in search of it; if the latter, then I say the carcases of the slain are left by the way, if not wholly consumed, for most certainly no remains have yet been discovered in the nest. These nests were found in October. Now, if the spider was then hibernating, at the time when many insects were still abundant, does it not prove that its peculiar food was no longer to be found without? and yet have we not seen that she may even, when thus shut in, meet with an occasional supply, for there can be no doubt that a portion of the worm had been eaten? I would just ask, if this long tubular nest is constructed solely as a dwelling for herself and young, forty of whom came forth from one of the broken nests after it was taken to my lodgings. No doubt a "dark lantern" might throw some light upon the question of whether this spider is a night prowler, and likewise in detecting the whereabouts of the males, as also of their kind of food.—*Joshua Brown; Bartonbury, Cirencester, April 12, 1856.*

The Small Spider of the Origanum.—Those who have visited the Hilly Field in autumn and spring, and have been sweeping or gathering the heads of the marjoram

(*Origanum vulgare*), cannot have failed to notice a little spider. On my recent pilgrimage to the shrine of Coleophora conspicuella I collected a few of these spiders, and sent them to Mr. Meade for determination; he pronounces them to be *Ergates benigna*, *Blackwall* (*Theridion benignum*, *Walckenaer*). Mr. Meade remarks, "These are all immature specimens in different stages of growth; these spiders construct a nest in the summer at the end of twigs of heath or juniper, or (as you find) *Origanum*, and there the young are bred, and seem to remain all the winter."—*H. T. Stainton*; *April 5, 1856*.—[*Intelligencer*, *April 12*].

Note on Argynnis Lathonia and Pieris Daplidice.—Some time since a doubt was raised by Mr. Scott as to the occurrence of *Lathonia* in England. I then wrote to him, giving the instances which had come under my own notice of its occurrence. I also sent him letters from Mr. L. Brock, Mr. E. Smith, Mr. Garrett and Mr. Seaman, respecting the capture of the insect. As, however, I found that Mr. Scott's doubts referred only to some particular specimens, I did not forward the letters to the 'Zoologist' as I had intended; and now I have unfortunately mislaid them, with the exception of Mr. Brock's. Mr. Newman (Zool. 5071) declares that the occurrence of *Lathonia* and *Daplidice* is limited in each species to about six cases, and that he looks with great suspicion on any cabinet in which these insects are included. Of *Daplidice* I took one on Holme Fen in August, 1852, as recorded in the 'Zoologist.' That I saw another on the previous day I have not the slightest doubt, though I then considered it as a late specimen of the female *Cardamines*, and did not take it. It had rather a heavy flight. My second specimen was taken by Mr. E. Smith, who has also taken two or three others of the same species in Worcestershire. Mr. E. Smith sells insects, but, as I have known him for some years, I may state that I have perfect confidence in what he tells me. His father, a most respectable man, who has collected for many years, and has a large collection of unquestionably British insects, assures me that he saw the insect when alive. Dover and Cambridgeshire are the places where *Daplidice* is said to have occurred; but in Mr. Kirby's Life it is stated, in a letter from Mr. Dale, that "Mr. Millard took *Daplidice* at Tewkesbury, where it has been found in great plenty." This is good evidence, at all events, of the possibility of its being found near Worcestershire. Of *Lathonia* I have two specimens, taken by my friend Mr. L. Brock, a medical gentleman in large practice in Colchester. One was taken by him in September, 1847, near Birch; and the other, a worn specimen, in the month of May previous, near Berechurch. I enclose his letter. I have a third specimen, taken by Mr. E. Smith in Worcestershire. I have also four specimens which I procured, many years ago, from the late Mr. Seaman, of Ipswich, who assured me that he had taken them himself, on a heath near that town, within a very short time; they were then unset, and I gave him two shillings for each of them. I wrote to his son, who also collects, to inquire whether he remembered his father taking the insect, and his reply is quite satisfactory. Mr. Seaman, I am aware, sold many foreign insects; but, though I should doubt the authenticity of a specimen, in a dealer's hand, which he had purchased, I see no objection to taking the word of a respectable dealer as soon as that of an indifferent person for insects that he has himself taken. Being, however, in Ipswich not long since, I saw,

in the collection of Mr. Garrett, who is engaged in business in Ipswich, two or three Lathonias, which he told me he had taken, some years before, near the town. I regret that I have mislaid his letter, but there can be no doubt about it. Perhaps Mr. Newman will specify the other instances, which he believes to be the only ones, in which Lathonia and Daplidice have unquestionably occurred; and will also tell us what insects an entomologist who is jealous of the honour of his cabinet must avoid. *Chrysidiformis* has turned up: why may not *Virgaureæ* or *Chryseis*, or any other reputed British insect? For many years the only known specimen of *L. Muscerda* was one found in a ditch by Mr. Sparshall; yet this very local insect is found in one spot on Horning Fen in considerable abundance, and, I believe, nowhere else. Would it not be more charitable in Mr. Newman to conclude that insects may exist, though he is not fortunate enough to meet with them, than to suspect multitudes of collectors of wilfully stating what is not the truth to enhance the value of their cabinets? Are there no localities of two or three hundred acres, such as Horning Fen, which have been hitherto overlooked? I confess I prefer the evidence of one respectable entomologist, who states that he has taken a scarce insect, to that of all the authorities of the Entomological Society, who can only say that they have never met with it. I cannot conceive anything more likely to deter a young collector from mentioning the capture of any insect hitherto disputed than the paragraph of Mr. Newman's. What, however, must young collectors think, after reading the passage in question, when they see, on the very next page, Lathonias, Daplidices, and other rare insects which the most latitudinarian entomologist would hesitate to acknowledge as British, advertised in quantity under the sanction of the 'Zoologist'? Since writing the above, I observe (Zool. 4650) a notice of the capture of six Lathonias by the Rev. W. Hawker. Does Mr. Newman allude to these, and are all others spurious?—*E. C. Buxton; Myddleton Hall, Warrington, April, 16, 1856.*

Parnassius Apollo at *Ealing*.—I beg to inform you that I yesterday met a gentleman who assured me that he saw *Parnassius Apollo* at Hanwell about six years ago. He chased it, but without success. This gentleman's veracity may be relied on. At a time when Apollo's claim to be a British insect is under discussion every scrap of information is of value.—*Henry Austin; Little Ealing, April 14, 1856.*

Chrysophanus Dispar in *Staffordshire*.—Seeing in your 'Manual,' it is stated at page 11, that the large copper is only to be obtained in the fens, I beg to say, that a few days ago a gentleman brought to show me a male and female of that species, which he had captured last year in Staffordshire: this is a new locality to me, and I suppose is so to most entomologists: I quite expect this insect will be diligently looked after this season in this new locality.—*Richard Weaver; 25, Pershore Street, Birmingham, April 9, 1856.*—[*Intelligencer, April 19.*]

Recent Entomological Captures in the Neighbourhood of Witney, Oxon.—On the 11th of March a moth, either the long-winged pearl (*Margaritia lancealis*), a variety of that insect, or a closely allied species, was found reposing on the trunk of an oak in Cokethorpe Park. The pearls, as a family, usually make their *début* in June or July. The appearance therefore of one of them at this early period, even if it be not a new species, seems worthy of note. Seven more specimens have since been obtained in this locality. On the 17th I took the satellite (*Glea satellitia*) at sugar in Cokethorpe Wood. Nothing is said by Wood, or by Humphrey and Westwood, about a spring appearance of this insect. Its appearance in the autumn is well known, and I can only attribute the fact of its reappearance at this season to its

having hybernated. It came in great profusion. I secured a few of the freshest-looking specimens, but even they were a good deal worn. On the 19th I captured a specimen of the large sword-grass (*Calocampa exoleta*), also at sugar, in Cokethorpe Wood. Another specimen was caught by Master Edward Appleby, at sugar, the same evening, in a neighbouring coppice. I obtained another on the 24th, since which date it has not been seen. Coupling the fact of the very late appearance of this insect in the autumn (I found it last autumn on the 6th of November) with its very early appearance in the spring, or indeed before that season—according to Francis Moore, physician, and other authorities equally to be relied on—has commenced, it may, I think, be reasonably enough concluded that this is also one of the hybernating species. Our oak-beauty season is just over: it opened with a couple of males reposing on trunks of oaks in Cokethorpe Park, on the 10th ult., and closed with a couple of females on the 4th inst.; from twenty-five to thirty specimens of both sexes having been observed between those dates. I had one emerge as early as the 14th of February, from a chrysalis which had been kept in doors during the winter. The small brindled beauty (*Biston Hispidaria*) made its appearance on the 23rd of February, since which date, up to the 4th inst., when the last was seen, a goodly number of males in the aggregate was observed resting upon the trunks of oaks. I have only met with two females throughout the season. One reason why so few females in comparison with males were discovered may be that the former are destitute of wings, which renders them much less conspicuous objects than the latter. This cannot, however, I think, be the only reason; for I searched too carefully the trunks of all the trees frequented by the males to have overlooked any females that might have been there. The females of many Lepidopterous insects have a wonderful knack of “making themselves scarce;” thus, although the males of *Bupalus Piniarius* may be found in great abundance in this neighbourhood, I have never met with a single female; and this is also the case with *Angerona Prunaria*: the males I have often found, the females never. On the 2nd inst. *Xylina lambda* was caught at sugar, and on the 10th *Orthosia munda*. Several specimens of the latter have been obtained, some at sugar, some among sallows, and some from chrysalides obtained in the autumn.—*S. Stone; April, 1856.*

Cloantha conspicillaris.—I have this morning bred a specimen of this insect from pupæ collected near here; this is the eighth specimen I have bred from pupæ found in Worcestershire.—*E. Smith; Turkey Street, Worcester, April 14, 1856.*—[*Intelligencer, April 19.*]

Noctua leucographa.—We have taken three males of this species, and a pair of *Munda* at sallows since Friday last.—*Bernard Smith; Marlow, April 8, 1856.*—[*Id., April 12.*]

Dasympa rubiginea.—I have taken one specimen of this pretty species myself, and seen three others taken by a collector who is staying here: therefore those in whose localities it occurs would do well to look for it now: I took mine in a gas street-lamp, but sallow is, I think, the best place to try for it.—*J. J. Reading; 42, Gibbons Street, Plymouth, April 8, 1856.*—[*Id., April 12.*]

Aleucis pictaria.—On the 6th instant I took this species on the Dartford Heath Fence, where I at the same time found *Gracilaria elongella* and *stigmatella*.—*H. J. Harding.*—[*Id., April 12.*]

Ennomos Alniaria at Margate, Kent.—I have much pleasure in communicating the occurrence of another specimen of this rare Geometra at Margate. A fine female

specimen was taken at rest on a post near the sea at Margate, on the 27th of September last, by Mr. William Aldridge, of Knightsbridge.—*A. F. Sheppard; Rutland House, Kingston-on-Thames, April 6, 1856.*

Coleophora alcyonipennella.—Few persons take this insect in the perfect state, and as I imagine it has yet to find its way into most collections, now is the time to look for the larva: it makes blotches on the leaves, sometimes as many as ten on a leaf of *Centaurea nigra* (black knapweed): these are very pale at first, but become browner as they grow old. The larva is generally attached to the under side. I have never found beyond three on a plant, and most generally only one. The larva is of a pale yellow colour, and the three first segments which it protrudes from its case are the only ones which have any markings. The segment next the head (which last, by the way, is brown) has a large, somewhat lobed, brown patch, darkest posteriorly. The next segment has four brown spots, forming a crescent: the central two of these are triangular. The third segment has but two, also brown spots, placed one on each side of the back. In addition to these, each of the three segments has also a deep brown spot placed just above the legs, and the legs themselves have three broad brown bands. The case is nearly straight, blackish, and with two pale longitudinal lines on the under side. It is not uncommon here.—*John Scott; South Stockton, Stockton-on-Tees, April 7, 1856. —[Intelligencer, April 19.]*

Ornix Loganella.—Our readers will be glad to hear that this species has been bred by Mr. Wilkinson, of Scarborough, from the leaves of the mountain ash.—[*Id., April 5.*]

Lithocletis irradiella.—Several specimens of this interesting species have been bred from oak leaves by Mr. Wilkinson, of Scarborough. The same gentleman is also now rearing *L. Amyotella*.—[*Id., April 5.*]

Bombus soroensis.—I caught a female of this insect on the 5th, at Hampstead. I showed it to Mr. Smith, who says that it is a very rare insect, and that he has only once met with it in the whole of his long career.—*George Edwards; 21, Wellington Terrace, St. John's Wood, April 14, 1856. —[Id., April 19.]*

Capture of Nitidula flexuosa in the North of England.—When hunting insects on the sea-coast near South Shields, in the middle of September last, I picked up a horse's hoof, out of which I took thirty-one specimens of *Nitidula flexuosa*, *Fab.*, an insect which has not, to my knowledge, been recorded as British. I can, however, scarcely bring myself to think that this conspicuous species is an indigenous insect. Shields is a large shipping port, and its vessels present a means of transport for insects that find a pabulum in dried animal substances. The hoof also was at no great distance from a large heap of slag and other rubbish, the refuse of a chemical factory.—*Thos. John Bold; Angas' Court, Bigg Market, Newcastle-on-Tyne, April 15, 1856.*

Capture of Alphitobius picipes at South Shields.—On finding *Nitidula flexuosa* I was led to examine the heap of chemical refuse, in hopes of confirming or refuting my suspicions of its being an imported species. Although not successful in doing this, still my labour was in some manner repaid by finding *Alphitobius picipes*, *Steph.*, in plenty. They were clinging to the under side of large pieces of slag which were lying on the sand, and were so abundant that I might have taken scores had I been so inclined.—*Id.*

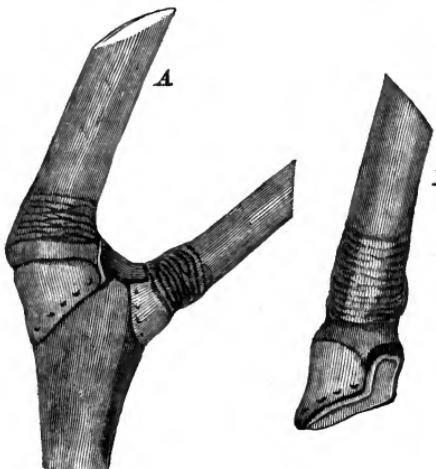
Query as to Helophorus dorsalis, Marsh.—Can any one explain the nature of the brilliant red spots which seem to shine through the elytra of this pretty little beetle

when recently captured? If they be caused by mites, it would be a curious fact that they should be peculiar to this species only of the genus, as they do not appear on any of the others, as far as I am aware. Stephens, in his 'Manual' (in the 'Illustrations' they pass unnoticed), speaks of them as if markings of the same nature as the dusky patches on the other parts of the elytra; and such they appeared to me when I captured a few specimens in February last, in Somersetshire, and only remarked the beauty of the species without examining it very minutely. But the red colour having almost faded away since, I now observed that it must have arisen from something attached to or actually in the body itself. I am surprised that Mr. Clark does not notice this peculiarity in his description (Zool. 5050), forming, as it does, so easy a guide to the recognition of the insect at first sight; but it may be peculiar to some individuals only. It has, however, been also seen, in this or one of the allied species (I am not sure which), on specimens taken on the banks of the Dodder, Co. Dublin. I therefore think the circumstance may fairly be deemed worthy of investigation.—*A. R. Hogan; Charlton, Dundrum, near Dublin, April, 1856.*

Origin of the Name Horse Chestnut.—Of late there has been a discussion in the

'Zoologist' respecting the origin of the name horse-chestnut. As yet it strikes me no solution of the difficulty has been given. I may be wrong, but from a child I have believed the name horse-chestnut to have arisen from the most marvellous similitude of a horse's hoof and nails therein, appearing at every joint of the young wood; and even when severed with a knife the frog of the horse's foot also appears. Mrs. Farr encloses a rough sketch, figs. A and B, which, I think, speaks for itself. I enclose also a piece of the horse-chestnut wood.—*J. Farr; Gillingham Rectory, Beccles, April 12, 1856.*

[I am surprised that no correspondent has previously suggested this most obvious solution. The cicatrix formed at the point to which the fallen leaf has been attached constitutes the hoof. Since receiving the Rev. Mr. Farr's interesting communication, I find that the fact is perfectly familiar to residents in the country, and that we naturalists are the only *ignorami*.—*Edward Newman.*]



Observations on the Zoology of Borneo.

By A. R. WALLACE, Esq.

A RESIDENCE of fifteen months in Sarawak and its neighbourhood having given me a very good idea of the Natural History of N.W. Borneo, I will briefly note the results, for the information of my friends and the readers of the 'Zoologist.'

With a very few exceptions, the Mammalia and birds are not very interesting or numerous. Of the former I obtained about thirty-five species, among which are two species of orang-utan, five other Quadrupeds, the rare and curious otter, *Potamophilus barbatus*, the no less interesting *Gymnurus Rafflesii*, and several curious Rodentia and Insectivora. To the great orang-utans I devoted particular attention, and have probably seen more of these animals in a state of Nature than any other European: I resided for eight months in the district they frequent, and in that time succeeded in shooting fifteen specimens, male and female, old and young, and among them two males of the smaller species, hitherto only known by the female skeleton. As an account of my observations on the orangs has been sent to the 'Annals of Natural History,' I shall say no more about them here.

The birds I found remarkably scarce and uninteresting, almost all being common Malacca species. Out of about a hundred I do not think more than ten are peculiar to Borneo, and probably not more than one or two are new. In the northern and eastern parts of the island there are probably many novelties to be found, but the districts nearest to Sumatra and to the peninsula of Malacca possess an ornithological fauna so little peculiar as to furnish strong presumptive evidence of a closer connexion between these countries having existed at no very distant geological epoch. What is known of the whole island, indeed, favours the same view, for out of 107 species of Bornean birds in the Leyden Museum only twenty-five are peculiar to it, the rest being also found in Java, Sumatra or Malacca, and the greater portion common to all those countries. Birds of brilliant plumage are remarkably rare, and the Psittacidae, so beautiful and numerous further eastward, are here represented only by the four common Malacca species. It is clear, therefore, that, from what is known of it, Borneo does not offer a very tempting field for the researches of the ornithologist.

In Entomology I was much more successful, and became, for that very reason, much more interested in this branch of Natural History. I collected very assiduously, and having, at the commencement of the dry season, been fortunate enough to discover a good locality, I perseveringly worked at it for eight months, and the result has been a collection which for the number of species, I should imagine, has rarely been surpassed by a single collector, in one season and at one station.

I find, on referring to my notes, that I have collected in Borneo about 5000 species of insects and upwards of 25,000 specimens. The species may be approximately divided thus:—

Coleoptera	.	.	.	.	.	.	2000
Lepidoptera (principally moths)	.	.	.	.	.	1500	
Other orders	.	.	.	.	.	.	1500

The Coleoptera were collected as *thoroughly* as possible, no groups being neglected in favour of others, and the minute as well as the larger species being in every case secured. I am in hopes, therefore, that this collection may give a *true* idea of the Entomology of this country, which can never be done when the small and obscure insects are either little sought after or entirely neglected. This, however, has been generally the case in collections from tropical countries. Numbers of large and brilliant insects have been obtained, perhaps over a large extent of country, and during several successive seasons; and the results, exhibited in our museums, have been too often held to give a correct idea of the Entomology of the Tropics, and have led to hasty generalizations and very erroneous views as to the universal characteristics of the productions of hot and cold climates. But let us suppose that, instead of Western Europe, some tropical country, such as Borneo or the peninsula of India, had been long inhabited by a race of entomologists, while the whole temperate zone was comparatively unexplored: would not the magnificent Carabidæ of Europe, the Cetoniadæ of the Cape and of N. China, and the large and handsome insects of various families culled from all the countries of the temperate zone, have been held to prove that excessive heat was not so prolific of fine forms and brilliant colours as a lower temperature and a more varied climate? When, too, the forms of tropical insects were familiar, those of colder countries would be looked upon with more interest and admiration, and the true Carabi would certainly be pointed to as a group unequalled by anything the Tropics could produce. My Bornean collection shows that brilliant colours are by no means the necessary

accompaniments of a tropical sun, for I doubt if, in that respect, these insects will surpass those even of Britain. In more than 500 species of Curculionidæ I have *not one* that is bright coloured ! and the number of small and obscure insects in all the families is very great. As to size, also, I almost doubt whether the *average* of all the species would exceed that of the beetles of our own country, absurd though the idea may seem to persons who have constantly associated great size with their notions of tropical Entomology.

I have made these remarks because some persons who have seen that portion of my collections which has already arrived in England have been much disappointed, and have complained (almost as if I *made* the insects as well as *collected* them) that Mr. Fortune's beetles from the North of China, though from a comparatively cold climate, were much finer. Now, as it is generally allowed that it is easier to overlook small insects than large ones, it is hardly to be supposed that I have perversely neglected the latter for the former, and we must therefore conclude that there is a real want of size and brilliancy in the average of the Bornean Coleoptera ; but I think we can show that this is also the case with insects from other tropical countries, compared with those from the sub-tropical or south temperate zone. The extensive collections of Mr. Bates on the Amazon show the same small average size of the Coleoptera compared with those of the Brazilian mountains, the Andes and Mexico. In India, too, it is well known that the finest insects and birds come from the Himalaya, *which are all in the temperate zone*, while the productions of the peninsula of India, though much nearer the equator, are not near so brilliant or remarkable. Again, the insects of Hong Kong in the Tropics are not so fine as those of Shanghai in the temperate region. We may, I think, therefore conclude that tropical heat is not necessary to the great brilliance or great size of insects, but that those of the countries bordering the Tropics are often equal, and sometimes superior, to those of countries situated nearer the equator.

The most striking features of my collection are the numbers of Curculionidæ and of Longicorns, far beyond the usual proportion of those families. The number of minute Elateridæ and Buprestidæ is also very considerable, and will much increase the lists of those groups. The numbers of the principal families are as follows, out of a total of about 2000 species :—

Longicorns	290 species.
Rhyncophora	550 , ,

Carabidæ and Cicindelidæ	.	.	.	.	.	70 species.
Buprestidæ	.	.	.	.	.	100 "
Elateridæ	.	.	.	.	.	125 "
Cleridæ	.	.	.	.	.	41 "
Cetoniadæ	.	.	.	.	.	22 "

Thus it will be seen that the Rhyncophora are more than a fourth, and the Longicorns a seventh, of all the Coleoptera, while the Geodephaga are only a fourteenth, and the Cetoniadæ a nineteenth.

On the whole the Coleoptera may be said to contain a few very large and a few very handsome species, a large number of moderate size and of very varied and elegant forms, while the great mass of them are small and obscure. These remarks will also apply, in a great measure, to the Hymenoptera, Hemiptera and Diptera. The Orthoptera, however, are more truly tropical in appearance, containing many large, singular and beautiful insects.

The diurnal Lepidoptera are comparatively few and uninteresting, most of the species being also found in Java and Malacca: there are, however, a few striking exceptions among the larger species; *Papilio Payeni*, *Bois.*, *P. Neptunus*, *Guer.*, a new species allied to *P. Codrus*, and the magnificent *Ornithoptera Brookiana*, are the most remarkable; and there is also a sufficient sprinkling of the small *Lycænidæ* and *Erycinidæ* to show that many other fine things may be expected when the interior shall be better known.

In the nocturnal species I have been more successful, though I only found one spot where they could be obtained: this was a cottage at an elevation of 1000 feet on a mountain ridge, surrounded by jungle and fruit trees. Here, on dark wet nights, they came to a lamp in the verandah, so plentifully as sometimes to keep me incessantly employed for several hours: I have taken as many as 200 specimens and 120 species in one night! but such occasions were rare, and I would often pass a week or ten days without obtaining a dozen specimens. On dry and fine nights there were none, neither on wet nights, if it was moonlight; but I do not remember one occasion on which it was both dark and wet that I did not obtain a very plentiful harvest. Some of the *Noctuas* and *Geometræ* are very beautiful, and many present singular forms of antennæ, palpi and legs, not observed in European species.

I will now say a few words as to my future plans. The two years which I have now spent in the East I consider as, in a great measure, preliminary or preparatory to the main object of my journey, which is to investigate the less known islands of the Eastern part of the Archi-

pelago—Celebes, the larger Molucca Islands, Timor, and, if possible, New Guinea. I feel myself now far better qualified than if I had gone at once to those countries. I have acquired the Malayan language, and have become acquainted with the manners, customs and prejudices of the people. I have learned much by experience in Eastern collecting, and have obtained such a knowledge of the productions of the western portion of the Archipelago as will add greatly to my pleasure and interest while exploring the Eastern.

I look forward, in fact, with unmixed satisfaction to my visit to the rich and almost unexplored Spice Islands,—the land of the Lories, the cockatoos and the birds of paradise, the country of tortoise-shell and pearls, of beautiful shells and rare insects. I look forward with expectation and awe to visiting lands exposed to destruction from the sleeping volcano and its kindred earthquake; and not less do I anticipate the pleasures of observing the varied races of mankind, and of becoming familiar with the manners, customs and modes of thought of people so far removed from the European races and European civilization.

The physical privations which must be endured during such journeys are of little importance, except as injuring health and incapacitating from active exertion. Intellectual wants are much more trying: the absence of intimate friends, the craving for intellectual and congenial society, make themselves severely felt, and would be unbearable were it not for the constant employment and ever-varying interest of a collector's life, and the pleasures of looking forward to a time when the stores now amassed will furnish inexhaustible food for study and reflection, and call back to memory the strange beautiful scenes among which they have been obtained.

A. R. WALLACE.

Singapore, March 10, 1856.

A List of the Birds of Banffshire, accompanied with Anecdotes.

By THOMAS EDWARD, Collector of and Dealer in Natural-History Specimens at Banff.

BEFORE I begin to enumerate the species, a few words concerning the district, the varied and interesting Ornithology of which I am about to record, may not be without interest, especially to those to whom it is entirely unknown. Banffshire is situate on the South side

of the Moray Firth, between the counties of Aberdeen and Moray; from the former of which it is separated, with a few trifling exceptions, by the river Deneran, and from the latter by the river Spey. On the shore it is about forty miles in extent, and it reaches sixty or seventy miles inland, gradually narrowing as it recedes from the coast. Although several spots are yet in a half-wild state, still, as a whole, the county is generally under cultivation, and that of the highest order; and yields, together with the two counties already mentioned, the very finest grain,—a fact well known to the corn-dealers of London, to which place large quantities are exported, and fetch the very highest price. A few morasses are left, but these are fast disappearing. Draining and other improvements are continually in progress, and our hills in many places are beginning to assume the appearance of verdant fields; places where the moss, the heather and the bracken were lately the only plants, and where the wail of the plover, the birr of the muir-cock, and the scream of the merlin were the only sounds, are now enlivened by the mellow voice of the lark as she wings her heavenward way, or rises before you as you tread the well-cultivated soil. Of lakes or lochs we have very few; so that my list, as regards the larger waterfowl, is very scanty; for, although great numbers of them are annually seen on their migrations, few descend to seek rest or food within the district, and scarcely any remain with us.

We have some woods and a few smaller plantations, both luxuriant and verdant; but of hedgerows we are almost entirely destitute. We have most beautiful valleys, intersected with rich meadows and pasture-lands, well stocked with cattle of the choicest breeds. The two rivers already mentioned, together with a few smaller streams, such as the Burn of the Boyne, the Burn of Portsay, and the Burn of Cul-len, constitute the whole of our fresh-water courses. Of hills we boast a few: these are distributed over the county, and Ben-Vennis is the highest.

Our sea-coast, with very little exception, is rocky, and in some places is bold, high and rather precipitous; for instance, at Troup-head, Gamrie-head or Moir, and Loggie-head. Other parts, however, although rocky, are comparatively low and flat, and in many places are approached by sloping and grassy braes. The greater portion of our low-lying rocks and beaches are laid under water twice in the day; so that the shore-birds which frequent such situations have to retire at each tide. We have no mud-flats or salt-marshes, and our sands are very limited in extent.

With these few, and, I may add, very simple, remarks, I will now begin my list.

The Golden Eagle (*Aquila chrysaëtos*). Many are the stories told amongst us of large birds of prey, said to be eagles, having been procured, and of others having been seen; but, from the want of proper information on the subject, and persons properly qualified to distinguish the species, it is impossible to say with certainty what these may have been. It is also currently reported that an eagle, but of which species I have never as yet been able to make out, has been known to breed in our higher districts. This is, however, very doubtful; at least, I have several times visited the places where it was said to breed, particularly the rocky heights of Ben-Vennis, the most likely locality within the county, and have never as yet found it to do so; nor do I think the place at all suitable for the eyrie of the eagle. Be this, however, as it may, several specimens of the golden eagle have been both trapped and shot within the district. One, a splendid bird, was killed near Tomintaul, about forty years ago; and another in Glen Fiddoch, about ten years later. One was seen, three years since, hovering above the sea-braes betwixt Banff and Portsay; and, having pounced upon and secured what appeared to be a rabbit or a small-sized hare, was again observed to rise, with his screaming prey firmly held by his powerful talons; and, winging his aerial way seawards, was soon far out of harm's way, escaping unscathed, although several gunners were in hot pursuit.

The Erne or Sea Eagle (*Aquila albicilla*) has also been at least twice procured.

The Osprey, Fish Hawk or Fishing Eagle (*Aquila haliaëtus*). This species has likewise been obtained as well as seen. A very fine male specimen was shot, about twenty-one years since, amongst the high cliffs of Gamrie-head. Another was seen by a surgeon of this town, some years afterwards, amongst the rocks at a place called Melrose, a few miles from where the other was obtained.

The Peregrine Falcon, Blue or Hunting Hawk (*Falco peregrinus*). Although there are some doubts as regards the former or any of their congeners having bred with us, there are none with respect to the present species. The peregrine is one of our native hawks, breeding annually, although very sparingly and generally in inaccessible places, in some of our highest headlands. It is somewhat strange, but not more strange than true, that our peregrines, when they can be procured alive, always find, like our grain already spoken of, a speedy

market southward, and always bring a good price, whether young or old, being esteemed the best for falconry, and far superior to any procured elsewhere. Two which I saw taken from the nest at Trouph-head, in 1852, sold the day after for a guinea each, and had they been kept three days longer would have brought double that sum, if not more. Their eggs also, when they can be obtained fresh, bring a high price to the daring individual who either descends or ascends for them, and again arrives in safety; this, however, is not always the case. I remember being an eye-witness once to one of the finest scenes with one of these birds and its quarry which it is possible to imagine. I had often seen some hawks mincing their prey, but never before in a wild state, and especially in such a place. One day, having got myself immured in a very dangerous and disagreeable fix on the precipitous and rugged brow of Gamrie-head, and having in my descent reached a landing, I lay down to rest, being somewhat fatigued and not a little torn by the jutting crags and sharp rocks. Whilst lying thus, a peregrine came sailing slowly but steadily along, bearing something large in its talons. On he came, seemingly unconscious of my presence, and alighted on a ledge only a few yards from where I lay. I now saw that the object he carried was a partridge. Having fairly settled down with his quarry on the rock, I could not help wondering at and admiring the collected ease and cool composure with which he beheld his struggling captive (for it was still alive) until death put an end to its sufferings: no lacerating with his beak at the body of the poor and unfortunate prisoner, in order, as it were, to hasten its termination; no expanding of the wing to maintain his equilibrium; although the last and dying struggle of the bird caused him to quiver a little. All being now over, and with one foot resting upon his game and the other on the rock, silent and motionless as a statue, the noble captor stood, with an enquiring eye, gazing at the now lifeless form of his reeking prey, seeming to doubt the fact, if birds can do so, that it was already dead; but there was no mistake: the blood, oozing from its mouth and wounds, its body being doubtless pierced by the talons of the conqueror, had already begun to trickle down the sides of the dark cliffs, dying the rocks in its course. Satisfied at last that life was fairly extinct, an incision was then made in the neck or shoulder of his victim, and into this the falcon thrust his bill several times, and each time that it was withdrawn it appeared covered with blood. This being done, and having wrenched off the head, which he dropped, he then began not to pluck but to skin his food, from the neck down-

wards ; and, having bared the breast, commenced a hearty meal by separating the flesh in portions from the sternum, with as much apparent ease as if he had been operating with the sharpest surgical instrument. I should have liked well to have seen the end of the work thus begun ; but, unfortunately, a slight movement on my part was detected by the quick eye of the hawk : my proximity was discovered. Having gazed at me for a few, and only a few, seconds, with an angry and piercing scowl, mingled with surprise, he then rose, uttering a scream so wild and so loud as to awake the echoes of the surrounding rocks ; whilst he himself, with the remains of his feast, which he bore along with him, rounded a point of the cliff and disappeared ; and there is no doubt he ended his repast in unmolested security.

The Merlin (*Falco æsalon*). These daring little fellows we have as natives. I have known them breeding on several of our hills, such as the Knock, the Bin (Huntly), Auchindoon, and Ben-Vennis. I have called the merlin a daring little fellow ; and is he not ? Yes, to be sure he is, and every naturalist knows it, or at least should know it. I know it, for several instances of his courage and daring have come under my own personal observation. Of one instance in particular I was an eye-witness, in which a merlin kept at bay and maintained his ground against a whole host of rooks and jackdaws. But, alas ! poor merlin, I doubt he suffered at last. Strolling about our sea-braes one morning, I was a good deal surprised at hearing a most tremendous noise a little before me, as if all the crows in the world had been there, and were all sounding their French horns at once. On coming to the spot I was no less astonished at seeing a little merlin battling with and holding at defiance an enormous flock of the black-robed gentry, whose screaming had first attracted my attention. Fain would I have stepped in, or rather up, for they were above me, and lent my aid to the weaker party, by giving the darkies a volley, for I had my gun with me ; but curiosity forbade. One would think that such a host could and would have smothered the little creature in a twinkling, had they wished. But such was not the case : they did not all assail him at once, nor yet singly, but generally three, four, and as many as seven, would be on him at a time, the main body keeping at a short distance, encouraging their companions, as it were, with their cawings. After a while one of these storming parties would retire, and then another would sally forth to the charge. The merlin, however, being of lighter metal and swifter of wing, managed, with wonderful dexterity, generally to avoid their attacks ; now rising, now

descending, and now turning in a zigzag direction, first to one side, then to the other; and mostly, also, succeeding, whilst doing so, in giving one or other of his adversaries a pretty severe peck, which had the effect of sending him away screaming. It appeared to me that the crows wished to drive the hawk from the braes, and that he was not willing to go; but I may be mistaken. At last, however, a crow, which seemed more courageous than the rest, rushed at him with such fury that I actually thought he would have swallowed him up at once, or sent him headlong down into the sea. But, no! the merlin withstood the shock, and contrived to deal his assailant a thrust as he approached and passed him. The merlin now rose considerably higher, and was followed only by this single opponent, who returned, with redoubled fury, to the combat. Up, up they soar, fighting as they go. Ah! they close, they scream, they grapple, and the feathers fly like dust. Down, down they come, locked in deadly embrace. I run to catch them both. But, no! See! they part, mount again and again, scream, close, and, as before, fall, but not this time to the earth; for, see! they part and mount again. But, 'tis now their last time; for, lo! the hawk, rising several yards above his bold and venturesome antagonist, rushes down upon him with a yell, such as hawks alone, when irritated, know how to utter, and with such force that both fell topsy-turvy right down into the sea, above which they were fighting. I looked to see them rise again; but they did not. After a little splashing all was over with the crow, but not with the hawk: he was still alive, although in a very precarious situation, from which he made several unsuccessful attempts to rise, but could not. It would seem that in dealing the death-blow to his tormenter he somehow or other got himself entangled at the same time, by perhaps his talons entering some of the bones of the crow, from which he could not disengage himself. But, be this as it may, there is little doubt but that both met with a watery grave; for on my leaving they were both fast drifting seaward, a small breeze blowing off the land at the time, with the crows hovering over them and still cawing.

THOMAS EDWARD.

April, 1856.

The Nightingale near Oundle.—I beg to state that the nightingale was heard distinctly on the 25th of April last, in a coppice on the borders of Rockingham Forest, not more than three miles from Oundle. I do not remember ever to have heard the nightingale so early in this cold county.—*W. M. H. Church; Geddington Vicarage, Kettering, May 8, 1856.*

An Egg Prodigy.—I have lately been presented with a double egg of the common goose, so marvellous in its character and dimensions that I cannot resist the desire to chronicle its wonders. The egg was laid by a goose belonging to Mr. Baylis, of Pixley, near Ledbury, in Herefordshire. It weighed $1\frac{1}{2}$ lb. good weight, and it measures 5 inches and $3\frac{1}{2}$ lines in length by 3 inches and 5 lines in breadth; and it contained within it another perfect egg, which measures 3 inches and $7\frac{1}{2}$ lines in length by 2 inches and 7 lines in breadth. The outer egg had been blown before it was sent to me, but a sufficient portion of the contents was adherent to the shell to show that it had contained a yolk. The inner egg, which I extracted through an orifice made by fracture of one end of the outer egg in travelling, was in every respect a perfect egg, and the broken pieces of the outer egg have been so skilfully replaced by fair fingers that the outline of the egg is very little impaired. The goose that laid this monster egg had her first brood last season, when her eggs were all of the usual size. She opened this season by laying the egg above described, and then stopped for about five weeks, when she laid six ordinary-sized eggs, on which she was sitting on the 5th inst., when I last heard from my friend the Rev. James Mapleton, of Torrington, near Ledbury, to whose kindness I am indebted for this great curiosity. Your readers will not be surprised to learn that Mr. Baylis states that the goose appeared very "mopish" for two or three days before laying the egg. To assist in forming a correct conception of the strangely abnormal size of this egg, I add that the size of the mute swan's egg, as given by Mr. Yarrell, is 4 inches in length by 2 inches and 9 lines in breadth. My eggs of the same bird, and also of the hooper, are larger, *i.e.* about 4 inches and 6 lines by 3 inches. My fine egg of the great auk measures 4 inches and 4 lines by 3 inches. The average size of the emu's egg, judging from specimens in my own collection, does not exceed that of this monster goose egg; and I have ascertained by experiment that it took eleven average sized eggs of the common hen to make up its weight. I have several double-yolked eggs of the common goose, the largest of which measures 4 inches and 7 lines by 2 inches and 8 lines; but this is the first instance that has fallen within my knowledge of one perfect egg being contained within another.—*J. P. Wilmot; Leamington, May 8, 1856.*

Note on the Late Appearance of the Common Scoter and the Scaup Duck in Norfolk.—I have once or twice recorded in the 'Zoologist' the occurrence of the common scoter (*Oidemia nigra*) unusually late in this district, in one instance even as late as July: a fine adult male of this species was killed on the 2nd of May on the Norwich river, about a mile and a half from the city, and therefore at a considerable distance from the sea-coast; a female was observed with it, but not obtained. A pair of scaup ducks were shot at Hickling Broad on the 21st of April.—*H. Stevenson; Norwich, May 7, 1856.*

The Miller's Thumb in Confinement.—Early in the present year Mr. Hall brought me a miller's thumb or river bullhead (*Cottus Gobio*), the first I ever had the opportunity of watching. These little fishes are so abundant in the streams of Herefordshire that I have often found a dozen in my net at once when fishing for water-beetles, but in our London waters they seldom turn up: this is on account of the preference which the miller's thumb has for clear running streams with a stony bottom. Like the beardie, the miller's thumb is a fish that always lies at the bottom; it has no power of sustained swimming, and never suspends itself in the water like a true swimming fish, but it will occasionally make a forced march to the surface, working its enormous pectorals with great vigour and great labour, and sometimes such efforts extend even to a tour of the globe or vessel in which it is kept, but after such extraordinary exertions it sinks down, apparently exhausted, to the bottom, and there for hours remains motionless. There is something very remarkable in the changes of colour which this fish undergoes; and these changes do not appear referrible to the ordinary tendency which the colour of certain fishes has to assimilate with the colour of the surface on which they are lying, but extraneous causes produce the effect: the swallowing a worm, the effort of a swimming adventure, and, on one occasion, the extrusion of ova, have produced such changes that the fish could not have been recognised under its altered aspect: the colours are various shades of gray and brown, and these are sometimes homogeneous, sometimes varied with great distinctness and brilliancy. Soon after this fish came into my possession I observed its abdomen begin to swell, as though gorged with food, of which it partook very freely, eating worms and raw meat with great avidity. This swelling continued to increase until it seemed most oppressive to the fish, which appeared continually gasping for breath. On the morning of Good Friday these symptoms were explained: it had extruded during the night a mass of ova, collectively equal in size to a sparrow's egg, and each individual ovum was about the size of the egg of *Helix hortensis*, and, like that, nearly transparent and enclosed in a tough envelope: the mass was closely adherent, somewhat reminding one of frog's spawn, but the ova appeared to have no mucilaginous covering. The number of ova must have been about a hundred: of course I proposed counting and measuring them, in order that I might favour the readers of the 'Zoologist' with exact statistics on these heads, but two mornings after their extrusion I found the unnatural parent had torn the mass asunder, and devoured the greater part of the ova, and before night the work of demolition was completed by the combined efforts of the miller's thumb and two minnows.—*Edward Newman.*

What is Gasterosteus pungitius, and have we that Fish in Britain?—The problem thus proposed for solution has to be considered from several points of view: 1st, from the point of priority, of course I would adopt the Linnean version of the subject, provided *a*, that I clearly comprehended his meaning, and *b*, that I was as clearly convinced that his was not a collective species, but I doubt on both these points, and reserve them for further consideration. I will refer, in the first place, to Cuvier, and quote every word of his description:—"L'Epinochette (*G. pungitius*, Lin.) est notre plus petit poisson d'eau douce. Elle a sur le dos neuf épines toutes fort courtes; les côtés de sa queue ont des écailles carénées" (*Règne Animal*, ii. 170). In the 'Fishes of Scandinavia' (pl. iv. fig. 2), is figured, under name of *G. pungitius*, a *Gasterosteus* having nine spines on the back, and coloured red about the lower jaw, cheeks, gill-cover and base of the pectoral. I have to regret that my ignorance of the Swedish language prevents my understanding a single word of the description, but the plates

in this work are the most scrupulously accurate of any natural-history representations I have ever seen, and therefore I take the evidence as perfectly conclusive that the *G. pungitius*, or "Sma Spigg" of Sweden, is a fish the male of which assumes a red breast in the breeding season. There is no doubt that the *G. pungitius* of Linneus, Cuvier and of the 'Fishes of Scandinavia' is one and the same fish. Well, then, we arrive at this conclusion, that there is on the continent of Europe a fresh-water *Gasterosteus* which has constantly nine dorsal spines, which has keeled scales on the sides of its tail, and the male of which, in its nuptial livery, is red about the gills and breast, like the familiar *G. aculeatus*. Now for the contrast: we have in the ditches round London myriads of a very minute fresh-water fish, known to every boy who *goes a stilling* by the name of "tinker:" this fish has nine spines on the back, a perfectly smooth tail, and the male, in nuptial livery, is of the most intense velvety black, never by any chance exhibiting the slightest tinge of red. Turning again to Cuvier, I find appended to the description of *G. pungitius* the following note:—"Il y a encore dans nos eaux une espèce très voisine (*G. lærvis*, Cuv.) qui manque de cette armure," and in the subsequently published 'Histoire Naturelle des Poissons,' by Cuvier and Valenciennes (t. iv. p. 506), this smooth-tailed species stands as *G. pungitius*, the *G. pungitius* of the 'Règne Animal' being omitted altogether. We now come to the historian of 'British Fishes,' an author who has done more for British Natural History than any other living or dead. Mr. Yarrell has given two figures of a *Gasterosteus pungitius*: these are respectively in the first and second editions of his admirable 'History'; but it is very difficult to distinguish by a wood-cut those critical differences on which closely allied or questionable species may be said to depend. Neither of the cuts gives an exact idea of our familiar little "tinker," but that in the first edition comes the nearest. The description in both editions is the same, and is comprised in a very few words. Mr. Yarrell says it "is distinguished from all the other sticklebacks by the nine or ten spines on the back, all anterior to the dorsal fin, and by the sides being perfectly smooth without any lateral plates," and the colour is described as "a yellowish or olive-green on the back; sides and belly silvery white, with minute specks of black; fins pale yellowish white." See 'British Fishes,' i. 99, where reference is made to Pennant, Donovan, Fleming and Jenyns, all of whom, I do not doubt, agree in describing the "tinker" as *Gasterosteus pungitius*, a decision in which I am not disposed to coincide. I will now describe my fish, which I will call

The TINKER or 9-spined Stickleback (*Gasterosteus lærvis*).

Character.—Number of fin rays, 1st D. 9, 2nd D. 10 : P. 11 : V. 1 : A. 1 + 9 : C. 12, each of the rays of the 1st dorsal has a small triangular fin membrane at its posterior base, all of them are erectile at the pleasure of the fish, and when erected it is seen that they are not seated exactly on the median line of the back, but on two lines, each removed almost imperceptibly to the right and left of a median line; on one line there are five spines, on the other four, and they are seated alternately one on each, right, left, right, left, &c.; every spine on the right line has, moreover, a most decided inclination to the right, and every spine on the left line to the left, so that the series are well represented by the teeth of a saw recently set, when they are alternately and purposely bent to the right and left; the 2nd dorsal and the anal are of nearly equal length, the former originating slightly in advance of the latter: the body is slightly crescentic in outline, the posterior extremity being somewhat depressed; its surface is smooth, and the carinated scales on the sides of the tail, which Cuvier makes

a character of *G. pungitius*, are entirely wanting. The colour is very uniform as compared with that of our ordinary sticklebacks: it is a somewhat metallic yellow-green on the back, gradually becoming paler and almost white on the belly, the whole being irrorated with minute black dots: the fins are very pale, almost colourless. The male resembles the female until the month of March, when he begins to assume his nuptial livery; the median line of the breast and belly then becomes black, a colour which day by day extends on either side, until all the lower parts of the fish becomes of the most intense velvety black; this eventually extends almost over the whole body, the back only retaining slight indications of the normal colouring.

Habits.—A fearless and ferocious little fish, instantly reconciled to captivity, and attacking with fury any prior inhabitant of the vessel in which it is placed: it will frequently seize a fellow-prisoner by the gill, the tail or a fin, and retain its grip with the firmness of a bull-dog: in the same way it will instantly seize a worm when presented to it, and allow itself to be drawn out of the water without relinquishing its hold: the females become very much distended with ova, and deposit them simultaneously; they are very large, generally eight or ten in number, and are immediately devoured, if found by fishes of the same or other species: its nest is not known to me. Unlike other species of *Gasterosteus*, it will not exist when confined in salt water, however diluted.

Habitats.—It is the most abundant of all fishes in the marsh ditches on the Surrey side of London; but it is rarely met with in ponds: in the ditches by the side of the Surrey Canal it breeds by myriads, and is a source of endless amusement to the boys of the neighbourhood, a stick, a thread and a worm being the only requisites for its capture.

In conclusion, I need scarcely say how much I shall feel obliged for additional information on this subject. The sticklebacks are generally considered too common to be worthy of notice, and I believe, for this very reason, we have more to learn respecting the distinction of species and the details of their interesting economy than of any other genus of fishes.—*Edward Newman.*

*Some Observations on the Disease in Fish called Fungus, which is so fatal in Aquaria, Fish Ponds, &c. By Dr. FRAZER.**

THE plant which is the subject of the present communication is by no means of extreme rarity, nor is it of local or limited occurrence. It has been observed with considerable accuracy, and always with interest, by many scientific naturalists, and we possess several good descriptions and drawings of it, both in the form of detached essays and in systematic treatises: thus, amongst others, Ledermuller, Worsberg, Spallanzani, Lyngbye, Kutzning, Carus, N. V. Esenbeck, Agardh, Berkeley, Braun, and especially Unger, have each contributed to our knowledge of its natural history, and recorded its most striking peculiarities; and as a proof of its extensive geographical distribution, I

* Read at the Dublin Natural History Society, on the 11th of April, 1856.

need merely state that it has been recognised in Denmark, Prussia, Austria, various parts of Germany, France, and the British Isles. The following are the chief synonyms by which it has been known:—*Saprolegnia ferox*, *Kutzing*, *Phyc. Gen.*; *Confervaria ferox*, *Gruithuisen*, 1821; *Byssus aquaticus*, *O. F. Müller*, *Flor. Dan.*; *Vaucheria aquatica*, *Lyngbye*, *Hydr. Dan.*; *Hydroneura*, *Carus*, *Act. Leopold.* 1823; *Saprolegnia Molluscorum* and *Achlyea prolifera*, *N. V. Esenbeck*; *Leptomitus clavatus*, *prolifer* and *ferox*, *Agardh*, *Syst. Alg.*; *Leptomitus Piscicola*, *Berkeley*. It is not uncommonly found growing upon the bodies of flies and other dead animal substances which have fallen into water, especially in the summer months, and it is also well known to occur upon the bodies of living fish, and to produce a most destructive form of epizootic disease amongst them—a perfect plague, of extremely contagious nature. Thus, for example, M. Davaine has described its baleful progress amongst the carp contained in a large pond in France. Hannover and Stilling also notice its appearing both amongst living and dead animals, growing “avec une extreme rapidité,” and producing in the former illness followed by death. Unger likewise, in 1842, found sick Cyprini, with the plant fully developed upon them, in a pond in the Gratz Botanic Gardens; and, during the same year, he asserts that the fish in the environs of the town were similarly affected, in so much that mouldy fish, as they were commonly termed, were often to be met with exposed for sale in the public markets; in one large pond all the fish were exterminated by its ravages, and in the reservoirs the thymale and trout also occasionally suffered. He says, “It killed in about forty-eight hours; few recovered which were once attacked: it grew both on the body and the fins; the fish lost their natural activity, sought the surface of the water, and seemed fatigued; the plant extended from the mouth to the vent, like a covering of velvet; the scales at the points attacked loosened and fell off; the parts affected were evidently enlarged, reddened, spotted with blood spots, and occasionally ulcerated; the fish appeared to move with pain, lay on their sides or back, and these symptoms usually preceded death for only ten hours.”

To complete its history, I may mention that it has been met with on the dead larvæ of the land salamander in water (*Carus*), or dead mollusca (*Gruithuisen*); on the wounded toes of the *Triton punctatus* (*Hannover*); upon a wounded eel (*Eg. St. Pierre*); upon the eggs of *Limax agrestis* (*Laurent*), and of *Lymnaea stagnalis* (*Valentin*); upon both the ova and wounded body of *Cyprinus Nasus* (*Valentin*); upon the eggs of the stickleback (*M. Coste*); and it is even stated that the

current of water through their nests is probably intended to prevent similar occurrences. Valentin has also noticed it on the eggs of the *Bufo obstetricus*; Pennant described it as it occurred upon roach kept in glass vessels, and it is well known to attack various species of carp, especially our well-known favourite, the *Cyprinus auratus*, or gold-fish. Of its occurrence on this animal we have a description by Dr. Bennett, in the *Edin. Philos. Transactions*. Finally Kutzing has described three species (which I believe to be all identical), one of which is termed the *Saprolegnia xylophila*, and found growing upon twigs in water. I too have likewise, in my researches, obtained it growing upon twigs, identical in its nature with his drawings and with the plant as it grows upon the bodies of living and dead gold-fish, and derived originally from them.

Further research on this subject has obtained for me the information that the *Saprolegnia capitulifera* has been observed by Alex. Braun to develope freely on decaying pieces of *Nuphar pumilus*, and also rapidly to attach itself to flies falling into the water in the localities where it thus grows on the plant. This plant, which fully deserves its name of *Saprolegnia ferox*, as it fell under my notice, occurred amongst a number of young gold-fish, about twenty-five in number, kept in a parlour, contained in a round glass jar along with four young minnows. The gold-fish had been obtained from the Botanic Gardens of the Royal Dublin Society at Glasnevin, in September, 1855, having been bred there in the Victoria-lily house during the previous summer months: they were of small size, varying in length from one to two inches; and, as I had obtained them for the purpose of making a series of observations upon the changes which they undergo in colour during their growth, I had them in every stage—gold, silver-coloured and white, and also dull brown. On the 28th January, 1856, I first noticed that two of these fish had each an extremely beautiful white tuft, resembling somewhat the appearance of common mould, upon its side: the extent of this patch of vegetation was not more than the size of a spangle. The fish were swimming about briskly, and appeared in perfect health, and I am certain there could not have been any extent of this plant—at least sufficient to be visible to the eye—present upon them twenty-four hours previously. I instantly isolated the two attacked for observation, washed out the jar, and replaced the other fish in it: they were still, to all appearance, healthy to the most minute scrutiny. In the course of twelve hours more the plant had rapidly extended in the two fish, occupying fully twice as much of the surface as it did in the morning, and next morning

(twenty-four hours) it had spread over more than half the body, reaching from the nose to the ventral aperture: one was completely dead at 10 A.M., and the other died early next day (30th January). As the plant extended over their bodies they appeared to be stiff, and swam as if moving with difficulty, seeking the top of the water; they afterwards seemed unable to do even this, sank to the bottom, and lay there sluggishly on their sides or in their usual positions: previous to this one of them appeared for a time to become top-heavy, his head sinking down so far as to threaten to turn him completely round on his back, and he made great and evidently painful efforts to regain his usual level condition. After death the plant still continued to grow over their bodies, developing on the snout and over the mouth, and on the fins and tail.

After a few days the plant manifested itself amongst others of the fish in rapid succession, upwards of half of them dying within twenty days from its first appearance amongst them. Those that last died presented visibly merely the appearance of white films extending over their bodies and dangling from their fins and tail, and did not develop during life the full-grown plant, with its tubuli, although in some it became sufficiently evident after death, and reached its perfect state and formed its zoospores. On most of those attacked at this time I noticed red bruise-like marks behind the gills, and especially upon the lower jaw, and in some also on the upper; similar appearances occurred around the ventral aperture, and in two or three upon the sides; but those first attacked did not present such appearances, nor did those which died more recently. When attacked my attention was usually attracted to them by their rising to the top of the water and swimming in a peculiarly uneasy manner, as if stiff or pained as they attempted to move; afterwards they became more and more languid, and sank to the bottom, breathing at longer intervals than in health, and irregularly, and dying usually as if suffocated, with their gill-covers widely distended and the gills visible.

I may here state that I examined these fish most carefully after death, their gills especially; the most external of the branchiae were in parts loaded with masses of germinating spores of the plant, which evidently had the effect of destroying their structure and disintegrating them, stripping off the fine lobed capillary processes from the denser cartilaginous structure, and finally loosening the cartilages and recrossing them. The developed plant consisted of very fine fibres, forming dense interlacing masses, which somewhat resembled the fine nap on velvet. The fibres were of rather tough consistence. Those

I first obtained were straight and unbranched; afterwards I found a branched condition equally common. The tubuli contained an amorphous mucilaginous fluid, with masses of globules, aggregated in very unequal amount in various parts; the larger were evidently oil spots, and almost filled the diameter of the smaller tubes; others were more minute, and multitudes were so small as merely to present the appearance of the finest dots—these distinctly exhibited “Brown’s movements”—and in some instances I had fine views of the more perfect circulation, termed “cyclosis.” The tubuli rarely had partitions; they ended when sterile in blunt tops, gradually tapering upwards, and in oval capsules when fertile. I could trace all the stages of the formation of these capsules. First the granular matter developing more densely at the upper part of the tube than elsewhere, so as to give it a distinct brownish colour, the top then becoming dilated into an ovoid form, and the granular matter still thickening and becoming separated from the ordinary contents of the tube, and the septa rapidly forming by the inflection of the utricle. Afterwards, as exactly described by Unger, the fructification progressed towards its development, the granular matter continuing to become more dense and opaque, and in its structure numbers of comparatively clearer spaces formed, which increasing, at last showed the capsule filled with from twenty to fifty zoospores arranged like the meshes of a network, and having still some granular matter evident at the sides of the capsules. I then distinctly noticed a movement of the four anterior zoospores* previous to their escape from the mother cell, one of them applying itself to the flask-like orifice, and gradually forcing its way out; evidently, as sketched, undergoing considerable pressure in the process, which probably, in this instance, occupied half an hour. Its escape was soon followed by that of the other zoospores, generally emerging two by two, one succeeding the other with great rapidity, and darting out for some distance (at least half the length of the capsule) into the water; they then, after a short rest, floated off right and left with evident motive power, and the other cells in the capsule in their turn began to exhibit independent movements and to escape; finally, the whole got out leaving the capsule empty, the process taking altogether half an hour, or a little longer, for its completion.

* This I wish to state distinctly, as I find that Alexander Braun, whose accuracy of observation is so well known, states that in “Derbesia Saprolegnia and Chytridium, the motion” which commonly occurs in other families, “does not become evident until after the birth of the previously crowded germ-cells:” I have also been able to verify this movement more than once.

Almost all the zoospores that I observed resumed their globular form soon after escaping, and ceased to display motile force in the course of six to ten minutes, after which they became stationary.

To illustrate the rapidity of the formation of these capsules, I may mention that a tuft of barren tubuli removed late at night and placed for observation in a glass cell, had developed in great luxuriance its fructification by next morning (within twelve hours), and from this I obtained the varieties of globular mother cells, and those with double and triple cells, and also those remarkable monstrous forms in which the barren tube grows again above the apex of the capsule. Some of the barren tubes grow to a very great size and thickness, and developed spores within their substance: this, however, was extremely rare. I also saw such a tube emit four spores from its extremity, but they displayed little motile power, and floated off only a short distance after their escape. I cannot decide as to these spores having cilia. Thurot describes their having two; Alexander Braun found only one single short cilium. I did not succeed in getting them; probably I might with higher forms or with the aid of chemical reagents, which latter process I avoided, as I wished chiefly to observe the development of the plant. It is perhaps too often assumed that cilia are indispensable for producing motion in cells. I obtained very perfect views of the mode of propagation of the spores. Many of them multiplied by a process of gemmation exactly like the cells of yeast; and the freshly-formed cell might by observation be seen with its fine granular contents aggregating together and forming larger masses, and even transparent glistening globules of oil. So rapid was this budding process that the same parent cell had occasionally two, three and four buds arriving at various parts of its surface and in different states of development. As they acquired a bulk nearly equal to that of the parent cell, I could generally observe the formation of a division occurring between the two; and this rapid evolution of cells soon formed dense masses of vegetation, which, by a little care, could be seen growing under the microscope.

I would wish to direct attention to a very interesting mode of development which I have procured sketches of—the formation of thin hair-like shoots proceeding from a parent cell, and at its extremity the reproduction of the cell-form again resumed, in its usual condition prepared for active fissile development. I would merely state, in connection with this, that the growth of some forms of mould appears to be closely analogous to what I have described. Thus I have seen similar thread-like processes connecting the sporules of the Ascophora

Mucedo, and it appears to me to be both an indication of extreme vital energy in the reproductive process, and also an arrangement, the object of which is evident, to enable the spores in their development to spread more rapidly over a more extended surface, and to interfere less with each other in their mutual growth. Having thus obtained a second condition of this plant, in which it is a rapidly budding unicellular body, I watched with much care for its return to the tubular form, and was able to trace it pretty perfectly. As the masses of cells developed they became rather larger in bulk and less defined (their utricle or limiting membrane, if at all existing, being of extreme fineness), and from the surface of the growth one of the cells developed the new shoot, which resembled in all things the parent plant.

It remains now to describe what I believe is new, at least as far as my researches go, the fact that this unicellular rapidly-developing condition of the plant is perfectly capable of destroying life in fish; many, indeed almost all of them which have recently died with me, and I have now lost all my fish but three, have presented this state of plant alone (at least during life). It adheres in dense masses to the fins, the tail, and even to the edges of the scales over the body; it collects on the gills, disorganises them, breaks down the higher organised tissues, lays bare the cartilaginous structures in the gills, tail and fins, and interfering with respiration (as it seems to me), proves even thus more rapidly fatal than from its more slow but equally certain destructive action on the vital tissues. It is impossible not to recognise in this, which might be termed a "mycelium stage," a strong analogy with the mycelic stage of Fungi. We know how dry rot, for instance, produces its destructive ravages in wood in its rapidly growing mycelial condition, not in its more advanced state of development, and I have, in my researches on this subject, become strongly impressed with the conviction that it is to this as yet unrecognised state of the Saprolegnia we are in reality to ascribe much, if not all, of the destructive action which it exerts on animal life. In fact, I believe we have in it a clear instance of a plant causing disease in healthy bodies, and not, as is too commonly believed, a mere vegetative growth developed on a body already in a state of ill health. Such is, indeed, the general doctrine held with reference to epiphytic growths occurring in disease, which are frequently regarded as accidental epiphœnomena, whereas their invariable presence alone in such cases would of itself go far, to the unprejudiced mind, to prove a more intimate connection between them and the diseased condition which they accompany, or, as I think, frequently produce.

[A discussion followed the reading of this highly interesting paper, during which Mr. Williams corroborated the fact of the destructive properties of this disease, as exemplified in gold-fish formerly in his possession, which were completely smothered by it: he attempted to destroy the disease by removing the diseased spots, but ineffectually. Mr. H. Barton mentioned that some years since he found that some minnows and sticklebacks which he had in confinement died of this disease; they had been fed for some time previously on bread-crumbs, after which he had placed them in a vessel with some gold-fish: these latter remained perfectly free from the disease, though all the minnows and sticklebacks died. Dr. Kinahan had seen this disease in the following aquatic animals while in a state of freedom and alive:—the gudgeon, loach, eel (young), stickleback, fry of the salmon and trout, and common smooth newt: during one season it was so prevalent in one part of the Dodder that nearly all the salmon and trout fry were destroyed by it: he had also seen it on the larva of the dragon-fly.]

Extraordinary Run with a Salmon.—On Wednesday last the Marquis of Bowmont, while angling for salmon in Sprouton Water, had one of the longest and most fatiguing runs perhaps on record in Tweed fishing. After some hours the fish reached opposite the Scurry rock, and here the Marquis thought to finish the sport by bringing him ashore, but unfortunately the line, from rubbing on the rock, or some other cause, broke near the hook, and the fish got off. The fish was several times distinctly seen during the running, and was evidently above 30 lbs. weight. The run lasted between five and six hours.—*Edinburgh Courant*.

The Artificial Rearing of Salmon.—There is every reason to expect a most successful hatching at the Stormontfield ponds this season. The ova present throughout the soundest and healthiest appearance—indeed, the hatching has already commenced. On the 3rd ultimo several of the little fish in the boxes were observed to have escaped from their tiny cells. This is the third season of the experiment. It may be interesting to give the dates of hatching in each of the three. In the first season the ova were deposited on November 23, 1853; and hatching was first observed on March 31, 1854. In the second season the ova were deposited on November 14, 1854; and hatching was first observed on April 18, 1855. In the third season the ova were deposited on November 22, 1855; and hatching was first observed on April 3, 1856. The large pond is still occupied by a large proportion of the first season's hatching, so that while one portion of the first season's hatching have rapidly matured, another portion of the very same hatching are at this moment in the pond, little parrs, with free egress afforded them, but not taken advantage of.—*Perth Courier*.

Artificial Breeding of Salmon.—It seems evident that the controversy regarding the habits of the salmon is being cleared up. I have read with great

pleasure and profit the letters of your correspondents at Perth, who, from their proximity to the breeding-ponds at Stormontfield, where the greatest experiment in pisciculture ever undertaken is being carried on, from their laudable desire to give every information, and from their rigid adherence to facts observed by themselves, have done more towards clearing up this much-vexed question than could have been hoped for. It would appear from the letters in the last 'Field' that the experiment is by no means completed. Let us hope that the noblemen and gentlemen, proprietors of the Tay fishings, who have already done so much, will not relax in their exertions till the experiment is fully carried out. There is much to be discovered yet; and it is to be regretted that no distinctive mark can be put upon the young fish now about to depart from the breeding-pond. Even at present there appears some confusion; for by the letter signed "Peter of the Pools" it would appear that several of the young fish were taken by force from the pond, and the same mark placed upon them as upon those which left it voluntarily. This, I am afraid, may lead to error; because, should any of these fish so taken and marked be retaken in the smolt state from the river during the present season, it may leave a loop-hole for prejudice to carp at. I think the experiment at Stormontfield does much to reconcile the theories of the two parties, one of whom asserts that the parr remain two years in the river, and the other that they go away when only twelve months old. Mr. Young, of Invershin, turned all his young fish into the river when they were twelve months old; some of these were retaken in the form of grilse the same season; but how can he be certain they all went to the sea? Some of them certainly did, because they came back grilse; but it is quite impossible he can prove they all went. Here his experiment agrees with that at Stormontfield; for, had all the young fish been expelled from the pond, it might have been concluded they all went to the sea, because some of them would have returned. Shaw, on the other hand, might possibly have detained fry which would have gone and returned had they been permitted. I can see nothing that cannot be reconciled between the two theories. The sporting world, the angler, the naturalist are greatly indebted to you for the irresistible evidence you have brought forward, and the impartial manner in which you have opened your columns to all comers who choose to write like gentlemen.—*Extracted from the Field newspaper.*

The Horse-leech (Hæmopsis sanguisuga) Swallowing a Worm.—I trust there are a few of the junior readers of the 'Zoologist' to whom the fact I am about to relate is as new as it was to myself: I had been one morning to the canal in order to obtain materials for the "Tittlebat theory" propounded at page 5124 of this present 'Zoologist,'—a theory which one of these days may possibly vie with that of my illustrious predecessor in these abstruse researches, the immortal Samuel Pickwick,—and having returned home laden with water-weed and worms, tinkers and tadpoles, leeches and larvæ, I popped one of the leeches into a tank, and one of my progeny, constant companions of all my piscations, popped one of the worms into the same tank. The leech almost immediately fastened on one end of the worm, which by its writhing, poor thing, seemed strongly to object to the seizure: this writhing soon attracted the attention of a juvenile perch, who forthwith sallied out from the umbrageous shelter of

a murex and seized that end of the worm which was still at liberty. I like to be precise, and gladly would I inform my readers which of the assailants possessed itself of the worm's head and which of its tail; but the clew to this discovery is lost for ever. After a short tussle the greater strength of the perch became very manifest; he swam deliberately and majestically round and round the tank with the leech in tow, the poor worm stretched out to double his natural length and a fourth of his natural substance serving as tow-line. Being very desirous of knowing what was the object of the leech, I made the perch relinquish his hold, and the leech and worm at once descended to the bottom, there rolling over and over, and the worm again writhing in apparent pain. In a few minutes it became evident that the worm was decreasing in length and the leech increasing in thickness; the worm was in fact in course of transfer to the stomach of the leech; in ten minutes the worm was swallowed all but one end, which became very pointed and was in constant motion, seemingly feeling about for something to take hold of; and, but for the difference in colour, really looking like an integral part of the leech, reminding me very forcibly of the finger at the extremity of an elephant's trunk. This last portion at length disappeared, and the whereabouts of the worm was only indicated by the heaving and undulating skin of the overgorged leech. Now this worm-swallowing propensity on the part of the leech was known to Cuvier, who speaks of its feeding on "lombries," but Linneus gives it the faculty of blood-sucking, and was, I believe, the author of the stereotyped, but very apocryphal assertion, that nine of these leeches will kill a horse: I incline to the opinion of Huzard, who, in the 'Journal de Pharmacie,' asserts that it never attacks a vertebrate animal.—*Edward Newman.*

Entomological Botany (with more especial reference to the Plants frequented by the Tineina). By H. T. STAINTON, Esq.

(Continued from page 5012).

Rubus Idaeus (continued).

Mr. Hardy has met with the curious larva of *Chrysocorys festaliella* on this plant, but I mention it more in detail under the "Common Bramble," on which I have found it myself. The only other larva I have to mention is a *Nepticula* discovered by Professor Frey, at Zurich, and which he has named *splendidissima*; it somewhat resembles *aurella*, but has a *black head* and *perpendicular fascia*.

It is hardly likely another twelvemonth will elapse without our finding it here.

Common Bramble.

I prefer giving this without a Latin name, as I am by no means certain whether any single species would answer my present purpose, and the Latin name of the "Common Bramble" is Legion.

Speyer cites as feeding on *fruticosus* the following; *Argynnис Daphne*, *Thecla Rubi*, *Saturnia Carpini*, *Lasiocampa Rubi*, *Callimorpha dominula*, *Acronycta auricoma* and *Euphrasiæ*, *Thyatira Batis* and *derasa*, *Hyppa rectilinea*, *Euplexia lucipara*, *Polia herbida*, *Orthosia gracilis*, *Xanthia silago*, *Cerastes Vaccinii*, *Erastria fuscula*, *Chlorissa viridata* and *Sericoris urticana*, to which must of course be added *Notocelia Udmanniana*: those species of which the names are in Italics have not yet been found here. I have long suspected that some species of *Œcophora* larva must feed in the stems of the bramble, and though up to the present time I have never succeeded in finding any, Dr. Jordan once slew, as he says, "a larva under queer circumstances. You know the holes made by *Cemonus lethifer* and allied species of bee in bramble-sticks; I was cutting off one to bring home, and as the burrows of the bee are usually at some depth in the stem, I thought I would shorten it; in so doing, I cut across the stick right through the middle of a green (*Depressaria*?) larva, which had either made the burrow, for there were no bees in it, or else had gone there for winter quarters; in either case it seemed to me somewhat curious." I mention this circumstance, which took place in March, 1854, in hopes that some of my readers may imitate Dr. Jordan in finding a larva in bramble-sticks, without following his example of slicing it in two. The larva of *Chrysocorys festaliella*, so long sought for without success, was found in some plenty by Mr. Wilkinson, of Scarborough, last autumn, and after I had cultivated the personal acquaintance of those he sent me, I was able to find it readily when down at Bideford, the peculiar blotched appearance of the leaves easily attracting one's attention. The larvæ appear to feed indifferently on the upper or under side of the leaf, but only eat the leaf half through, so as to cause pale greenish blotches, which form a striking contrast with the natural dark green of the bramble-leaves; and a leaf on which many larvæ are feeding has a singularly variegated appearance. Large blotches, a little puckered, are made in the leaves by the larvæ of *Tischeria marginæ*; the commencement of these mines is generally whiter than the broader portion, and when the mine is small the shape reminds one vastly of

a ram's horn. They may be observed throughout the winter and early spring months, and again in July. The long slender tortuous galleries, with which all who observe hedges in winter must be



familiar, on the leaves of the bramble, are the empty mines of *Nepticula aurella*; when tenanted, they are far less conspicuous, and the appearance they present is shown in the annexed wood-cut.

Rosa canina. Dog-Rose.

There is no doubt that the insects here mentioned will be found on other species of *Rosa* than *canina*, but we adopt that as our text as it is emphatically our common wild rose, the rose which we remember from our childhood, and the rose which has oft lacerated our fingers.

Speyer enumerates as feeding on it *Saturnia carpini*, *Liparis dispar*, *Orgyia gonostigma* and *antiqua*, *Gastropacha quercifolia*, *Pœcilocampa Populi*, *Clisiocampa neustria*, *Acronycta cuspis* (the larva of which excessively resembles that of *A. Psi*, only that it has a long tuft of hair on the hump on the fifth segment), *Orthosia litura*, *Ennomos lunaria*, *illunaria* and *illustraria*, *Odontopera bidentata*, *Anticlea derivata* and *badiata*, *Harpalyce fulvata*, *Scopula prunalis*, *Tortrix (læviana) rosana*, *Pardia tripunctana*, *Spilonota roborana* and *Pterophorus rhododactylus*.

This last-named, though wanting in so many collections in this

country, is considered in many parts of the Continent as an injurious garden-insect, from the *penchant* that the larva has for eating up the undeveloped rose-buds. The little yellow *Dictyopteryx Bergmanniana* is too common a frequenter of rose-bushes to have escaped the notice of any diligent collector.

The first rose-feeding larva belonging to the Tineina which engages our attention is that of *Lampronia quadripunctella*: in the month of June, when the gay-coloured *Harpella Geoffrella* is on the wing, his sombre insect, to which Professor Zeller gave the sour epithet of *morosa*, flies in little swarms, at early morn, round the twigs of the rose-bushes; the larva, which is reddish brown or brownish red, at any rate more red than the larva of *Spilonota roborana*, feeds in the young shoots of the rose at the end of April and beginning of May.

The next rose-feeder is *Coleophora gryphipennella*, which, now that it has been so popularised by Mr. Douglas in his 'World of Insects,' and by Mr. Shield in his 'Practical Hints,' has become a household word with nearly all my readers, and needs no lengthened history from me; it is found juvenile in the autumnal months blotching the rose-leaves by extracting their juices just before they fall, and in May we again find it after a six months' fast at its old trade, with its ochreous case with serrated edge attached to the under side of the leaf.

Tischeria angusticollella, a species we have yet to find in this country, treats the rose-leaves in a very similar mode to that followed out on bramble-leaves by *T. marginella*; it makes large blotches, a little puckered. A *Lithocolletis* feeding on rose is one of the "things hoped for," of the existence of which we are not at present aware. The known *Nepticulæ* of the rose are three,—*anomalella*, *angulifasciella* and *Centifoliella*; to what extent the last feeds on other species of rose than that (*Rosa Centifolia*) from which it derives its name we are not aware. The mines of *anomalella* and *angulifasciella* are sufficiently distinguished, as the gallery-mine with a yellow larva and the blotch-mine with a greenish larva. The mine of the yellow larva of *Centifoliella* resembles somewhat that of *anomalella*, but the commencement of the mine is not entirely filled up with excrement, for you see a slender whitish margin on either side.

A larva which I have repeatedly collected, but never bred, feeds on the pulp of the hips in October; it is pinkish in colour; it quits the hips when full-fed (you can see at once where it has been by the

black streaks on the side of the hip), and probably goes into the ground, or perhaps into the stem of the rose-bush. Mr. Douglas had suspected that this larva might belong to *Stigmoneota Germarana*, and M. Bruand observes of that species, "chenille dans les baies de rosier."

Further, I wish to call the attention of my readers to a larva found by Mr. Scott, in the Bedeguar-gall of the rose, not the proper, apod, inert tenant of the gall, but a lively sixteen-legged brown Lepidopterous larva; I suspect referable to some *Tortrix*, for we know that a very pretty species, *gallicolana*, has been bred in Germany from oak-apples, and why not another species on the Bedeguar rose-galls?

It is not a little singular that, extensive as the genus *Gelechia* is, we do not know of a single species which feeds upon the rose.

H. T. STAINTON.

Mountsfield, Lewisham,
May 5th, 1856.

List of the British Eupitheciæ, with Notes on some of the Species.
By HENRY DOUBLEDAY, Esq.

My kind friend, M. Guenée, having carefully examined every British species of *Eupithecia* which I could obtain to send to him I forward a list of them, which will help to clear up the doubts which have existed as to the nomenclature of several species, and will add a few remarks about some of them.

List of British Eupitheciæ.

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|---|---|
| 1. <i>Togata</i> , <i>Hüb.</i> 464, ♀. <i>Gn.</i> | 6. <i>Debiliata</i> , <i>Hüb.</i> 466. <i>Gn.</i> |
| 2. <i>Pulchellata</i> , <i>Steph.</i> <i>Gn.</i> | <i>Nigropunctata</i> , <i>Chant.</i> |
| 3. <i>Linariata</i> , <i>W. V.</i> <i>Hüb.</i> <i>Gn.</i> | 7. <i>Tenuiata</i> , <i>Hüb.</i> 394. <i>H.-Schæff.</i> |
| 4. <i>Rectangulata</i> , <i>Linn.</i> <i>W. V.</i> <i>H.-Schæff.</i> 275, 276. <i>Gn.</i> | 168, 169. <i>Gn.</i> |
| <i>Cydoniata</i> , <i>Bork.</i> | 8. <i>Plumbeolata</i> , <i>Haw.</i> 360. <i>Gn.</i> |
| Var. <i>Subærata</i> , <i>Hüb.</i> 463. <i>Steph.</i> | <i>Begrandaria</i> , <i>Boisd.</i> <i>H.-Schæff.</i> |
| Var. <i>nigrosericeata</i> , <i>Haw.</i> | 128, 129. |
| Var. ? <i>Sericata</i> , <i>Haw.</i> | 9? <i>Haworthiata</i> . |
| 5. <i>Coronata</i> , <i>Hüb.</i> 372, 373. <i>Gn.</i> | <i>Plumbeolata</i> , var. a? <i>Haw.</i> <i>Gn.</i> |
| <i>V-ata</i> , <i>Haw.</i> | 10. <i>Pusillata</i> , <i>Hüb.</i> 378. (non <i>Haw.</i>) <i>Gn.</i> |

- Subumbrata, *Hüb.* 233. *Boisd.* 25? *Minutata*, *W. V.*? *Hüb.* 454 (non *Hüb.* 237).
 11. *Pygmæata*, *Hüb.* *Dup.* *Gn.* *Absynthiata*, *Gn.*
Palustraria, *Doubl. App. Zool.* 1850. *Var. Innotata*, *Steph.*
 12. *Satyrata*, *Hüb.* 439. *H.-Schæff.* 26? *Assimilata*.
 149, 151. *Gn.* *Absynthiata*, *Haw.* *Steph.* *Wood*, 669.
Cinereata, *Curtis.* *Absynthiata*, var. B. *Gn.*
Var. Callunaria, *Stainton.* 27. *Expallidata*, *Gn.*
Var. Fagicolaria, *MSS.* 28. *Succenturiata*, *Linn.* *Hüb.* 459. *Gn.*
 13. *Abbreviata*, *Steph.* *Wood*, 660. *Gn.* *Var. Disparata*, *Hüb.* 246.
Reductaria, *Boisd.* 29? *Subfulvata*, *Haw.* *Steph.* *Wood*,
Nebulata, *Haw.*? 675.
 14. *Exiguata*, *Hüb.* 379. *Wood*, 659. *Succenturiata*, var., *H.-Schæff.* *Gn.*
Gn. 30? *Oxydata*, *Tr.* *Boisd.* *Gn.*
Trimaculata, *Haw.* *Cognata*, *Steph.*
Var. Ochreata, *Steph.* 31. *Irriguata*, *Hüb.* 397. *Gn.*
Var. Lanceolaria, *Doubl. List.* (non *Variegata*, *Haw.* *Steph.* *Wood*, 681.
Boisd.) 32. *Cousignata*, *Bork.* *Hüb.* *Wood*, 682.
 15. *Innotata*, *Knoch.* *Hüb.* 441, 442. *Gn.* 33. *Venosata*, *Fab.* *Hüb.* *Wood*, 683.
Gn. *Gn.*
 16. *Indigata*, *Hüb.* 339. *Gn.* *Decussata*, *Don.*
 17. *Nanata*, *Hüb.* 387. *H.-Schæff.* 160, 34. *Subnotata*, *Hüb.* 458. *Gn.*
 161. *Gn.* *Simpliciata*, *Haw.* *Steph.* *Wood*,
Angustata, *Haw.* 672.
 18. *Subumbrata*, *W. V.* *Gn.* 35. *Denotata*, *Hüb.* 453. *Gn.*
Piperata, *Steph.* *Wood*, 678. *Pimpinellata*, *Herrich-Schæff.* 153.
Obrutaria, *H.-Schæff.* 145, 146. *Doubl. List.*
 19. *Dodoneata*, *Gn.* 36. *Pimpinellata*, *Hüb.* 443, 444? *Dup.*
Subumbrata, *Haw.*? *Steph.*? *Gn.*
 20. *Castigata*, *Hüb.* 456. *Gn.* *Albipunctata*, *Haw.*? *Steph.*? *Wood*?
Singulariata, *Haw.* *Steph.* *Wood*.
 661. 37. *Pumilata*, *Hüb.* 388. *H.-Schæff.*
 21. *Constrictata*, *Gn.* 127. *Gn.*
Distinctaria, *H.-Schæff.* 162, 163? *Bistrigata*, *Haw.*
 22. *Vulgata*, *Haw.* *Steph.* *Wood*, 666, *Strobilata*, *Steph.* *Wood*, 656 (non
Gn. *Hüb.*)
Austeraria, *H.-Schæff.* (non alior.) *Var. Rufifasciata*, *Haw.* *Steph.* *Wood*,
Var. Subfuscata, *Haw.* 657.
Var.? *Subfasciata*, *Steph.* 38. *Subciliata*, *Gn.*
 23. *Sobrinata*, *Hüb.* 465. *Gn.* *Circuitaria*, *Stain.* (non *Hüb.*)
Lævigata, *Haw.* *Steph.* *Wood*, 658. 39. *Egenata*, *Gn.*
Var.? *Expressaria*, *H.-Schæff.* 284, *Egenaria*, *H.-Schæff.*
 285. 40. *Sparsata*, *Hüb.* 398. *Gn.*
 24. *Absynthiata*, *Linn.* *Hüb.* 453. *Gn.* *Var. Notata*, *Steph.* *Wood*, 670.

7. *E. tenuiata*. The larva of this species feeds in the blossoms or catkins of the common sallow (*Salix Capræa*). The best way to obtain them is to collect a quantity of these catkins just as they are beginning to fall, and place them in a breeding-cage ; they will require no further attention, and in July the moths will appear.

8. *E. plumbeolata*. The insect described by Haworth under this name is unquestionably identical with *Begrandaria* of Boisduval, and of course this latter name must sink. M. Guenée regards the smaller insect, which I intended by the name *Plumbeolata* in my list—but which I now propose to call *Haworthiata*—as a variety, and it is no doubt the var. α of Haworth, of which he says “*Forte distincta*.” I am inclined to think that it is distinct, and Mr. Vaughan has most kindly sent me some particulars which tend to confirm me in my opinion ; he says that when living the base of the abdomen is orange, while in *plumbeolata* it is of one uniform gray tint throughout. I believe *plumbeolata* appears about the end of May ; Mr. Vaughan says that the smaller species, *Haworthiata*, does not appear till July, and continues on the wing about three weeks : it appears to be attached to *Clematis Vitalba*.

10. *E. pusillata*. The only specimens that I ever obtained of this insect were taken by Samuel Wood, gardener to Captain Coker, who resides in Devonshire.

12. *E. satyrata*. I have no doubt that the *callunaria* of Mr. Stainton and the insect taken by the Rev. J. Greene and called *fagicolaria* are varieties of this species. The ground-colour of the wings varies from leaden gray to deep brown, but the markings are the same in all.

13. *E. abbreviata*. The larva of this species feeds upon the oak, and it appears in the winged state earlier in the year than any other species : I have seen it out the end of March.

14. *E. exiguata*. I have bred this species from larvæ which fed upon the whitethorn : I expect it also feeds upon the beech, as it abounds on the trunks of those trees in some parts of our forest, where there seems to be nothing else for it to feed upon, as there is no underwood.

19. *E. dodoneata*. The larva of this small species feeds upon the oak, and I think Mr. Bentley told me that he had bred it from the gale (*Myrica Gale*).

21. *E. constrictata*. H.-Schæffer's figures 162 and 163, *E. distinctaria*, very closely resemble this insect, but this species is considered identical with the *E. Libanotidata* of Schlæger, which I

have received from M. Zeller, and, although closely allied, it is certainly distinct from our British species.

22. *E. vulgata*. This is the *austeraria* of H.-Schæffer, but the original figure of Hübner appears to represent a variety of *castigata*; and M. Guenée has therefore adopted Haworth's name, about which there is no doubt.

23. *E. sobrinata*. This species varies very much. Mr. Shepherd has a splendid series from Scotland, which he kindly allowed me to send to M. Guenée, who said it was a remarkable variety, and at first he was inclined to consider it a distinct species. The insects taken by Mr. Samuel Stevens appear to be the *exprassaria* of H.-Schæffer, but M. Guenée considers this to be only a variety of *sobrinata*, and I believe it would be impossible to separate them from some of Mr. Shepherd's Scotch specimens.

24, 25 and 26. M. Guenée is inclined to consider all these as local varieties of one species,—the *Absynthiata* of Linné. I am rather inclined to think that this opinion is not correct. No. 24 appears to be the true *Absynthiata* of Linné, which he says feeds upon wormwood, &c.: it is well figured by Hübner, No. 453. It has been bred from wormwood by Mr. S. Stevens, and from ragwort by Mr. Gregson and others: it is principally found upon the coast and in the fens, and appears in the perfect state in August.

25. Well-figured by Hübner, No. 454, under the name of *minutata*, *W. V.*; it is considerably smaller than the preceding insect, and appears in the perfect state in June: the larva feeds in the autumn upon heath (*Calluna vulgaris*).

26. This appears to be the *Absynthiata* of Haworth, Stephens, &c., and is a garden-insect, and seems to have been more common formerly than it is at present. The wings appear to be broader and more rounded, and the colour darker than in the other two species (?): the perfect insect appears in May. Mr. Wailes mentions, in a letter, seeing two at Newcastle, on the 4th of the present month, and Mr. Shepherd kindly sent me a living specimen to-day (May 7th); the larva is unknown. These observations may induce others to pay attention to the subject, and prove whether they really constitute three species or are only local varieties.

27. *E. expallidata*. This large species is very closely allied to *Absynthiata*, but is always much paler in colour, and is almost without the white marginal spots on the upper wings: it has principally occurred on the coast, and is found in August.

29. *E. subfulvata*. This species seems to be considered by nearly every continental author as a variety of *E. succenturiata*, but I think erroneously; the only real difference seems to be that of colour, and had the two insects occurred regularly together, I should have been inclined to have adopted this opinion; but *subfulvata* seems to be a much commoner species, and to occur in situations where *succenturiata* is not met with. I hope some one will settle the question by rearing both insects from the larva.

30. *E. oxydata*. M. Guenée thinks this will prove a distinct species, and that the larva feeds upon the osier (*Salix viminalis*).

34. *E. subnotata*. The larva of this insect feeds upon the various species of *Chenopodium*.

35. *E. denotata*. The larva of this species feeds upon the blossoms and seeds of *Pimpinella Saxifraga*: it is not common here, and principally found near the coast on dry soils: it is very rare on the Continent.

36. *E. pimpinellata*. This very distinct species appears to be rare in this country; I have taken three specimens here in August: when living, the base and apex of the abdomen are snow-white.

38. *E. subciliata*. I suppose this is the insect which is called *Dosithea circuitaria* in Mr. Stainton's 'Annual,' but it bears no resemblance to the figures of that species in Hübner's and H.-Schäffer's works; it seems rare in England: its ciliated antennæ distinguish it from all the other *Eupitheciæ*.

39. *E. egenata*. Mr. Buxton took a single specimen in Wales, and Mr. Bond met with a wasted one in the Isle of Wight; I have seen no other specimens: it is a very distinct species.

Mr. Bond has a specimen of another species evidently distinct from any of those in the foregoing list; it is closely allied to *Veratrata*. Mr. Bond kindly allowed me to send it to my friend, M. Guenée; he thinks it is not *Veratrata*, but says it will not do to create a species from a single specimen not in very good condition. In conclusion, I beg to thank those friends who have kindly lent me specimens of this interesting genus for examination, and I feel particularly obliged to Mr. Edwin Shepherd and Mr. Bond for their kind assistance, and to Mr. Stainton for the loan of Hübner's and Herrich-Schäffer's works.

The first volume of M. Guenée's work on the *Geometræ*, will, I believe, be published early in the autumn; the second volume, containing the *Eupitheciæ*, will not appear till the winter.

I shall be much obliged if any collectors will forward to me for examination any doubtful species of *Eupithecia* which they may meet with, giving the localities and dates of capture.

I recommend every entomologist to purchase M. Guenée's admirable works, and I must express my regret that such offensive and uncalled-for strictures upon them have been published in this country, but I suppose it is too true, that

“He who surpasses or subdues mankind,
Must look down on the hate of those below.”

HENRY DOUBLEDAY.

Epping, May 8th, 1856.

Some Remarks on the Economy of Granivorous Lepidopterous Larvæ.—On a former occasion I brought before the Society* some observations made upon the destruction of corn by different species of Coleoptera, more mischief being done by the weevil tribe than by any other; and my attention being called to the subject, I was led to think that much damage was done by other depredators as well as those at that time mentioned. I accordingly kept the subject in view, and accidentally discovered a large colony of larvæ, which I think I may with justice rank second to the weevils, as far as damage to corn is concerned. During the spring of 1855, whilst passing through a corn-loft, my attention was attracted by a quantity of wheat mixed with dust lying on a window-sill, which presented a somewhat unusual appearance, a good deal of it being eaten in a manner totally different from the way the weevils hollow it out, every grain touched having the larger or germinating end just taken off, and neatly rounded. On looking for the cause, I found a great number of small larvæ of a whitish colour busily at work consuming the wheat. A few days afterwards, on paying them a second visit, I found them either spinning their webs or preparing to do so; and from the great number of these webs placed so closely together, irregular masses of wheat and dust could be lifted in layers of from one to three inches in thickness. I placed a small quantity in a box, where it remained forgotten until the middle of June or beginning of July, when on opening it, I found that a large number of small moths had made their appearance, and about this time great numbers of similar moths swarmed about the stores and the outbuildings around them. These chrysalises were in colour reddish brown and semi-transparent, and enveloped in an exceedingly tough web or cocoon of a whitish hue. When the larvæ do not spin amongst the wheat, they form colonies of these cocoons in a very curious way, as the board which I now exhibit will show: it was found when removing some boarding in an old warehouse, and from the number of cocoons in so small a space an idea may be formed of the multitudes of these moths during the summer season. About a month since, whilst looking for some in a warehouse, I remarked, as I thought, a curious fungus growing from the beams in one end of the loft. I cut a quantity of it away with my knife, and

* Read at the ordinary Meeting of the Dublin Natural-History Society, on the 16th of May, 1856.

found that the wood, which was partially decayed, was tunnelled out in every direction by similar larvæ, and even in some places the sound parts of the beams pierced like wood affected with the dry rot : the particles cut out during the process of boring were conveyed to the end of the tunnel, and, being held together by a web-like substance, projected in patches of from one-half to three-quarters of an inch in depth from the beams, and formed the excrescence which at first caught my attention. Some time previous to this, the warehouseman called me to look at a large quantity of (as he thought) sea-sand, which remained after the removal of a quantity of wheat, and which he imagined must have been mixed for the purpose of adulteration. On a superficial examination the resemblance was very striking, but on lifting it in the hand its lightness at once told that it was very different : on close examination, I found it was entirely composed of the rejectamenta of the larvæ alluded to : the quantity on the loft was very considerable, which shows how destructive the moths are. The wheat is eaten in a peculiar manner : in every instance, as before-mentioned, the germinating end is destroyed, and the exterior coat of the grain consumed in preference to the interior. In this they differ from the weevils, which hollow out the interior of the grain, leaving the exterior almost untouched. I do not mean to say that the larvæ refrain from touching any portion but the outside of the wheat, but that they appear to prefer it to the interior. It may be worth mentioning, that in most cases, where the cocoons were fastened to the walls, a number of these gnawed grains were attached to the webs ; but this may, I think, be perhaps attributed to the wheat becoming entangled during the turning or shifting in the loft. In the beginning of April of the present year I placed a quantity of the wood cut from the beams, and well filled with larvæ and cocoons, in a box, and about the end of the month, on opening it, I found that a few moths had come out, apparently identical with those before noticed. Some of these proved to be the *Tinea cloacella* (*Haw.*), which is very commonly in this country called the clothes-moth ; the others, being a good deal rubbed, could not be identified with certainty, but I think they were all alike. A peculiarity in their habits deserves to be noticed, namely, on opening the box in which they were they did not at first attempt to fly, but ran quickly about, hiding wherever they could amongst the contents, and, if well-concealed, would not stir unless again disturbed. I cannot speak with certainty as to the names of the moths which I obtained last year, as the box in which they were was unfortunately mislaid ; but that several species of *Tinea* infest the warehouse alluded to I have little doubt. The occurrence of *Tinea cloacella* amongst them is, I think, of considerable interest, as I am not aware that any previous mention has been made of its destructive habits with reference to corn.—*James Haughton, Jun.*

[I have received from a correspondent a beautiful example of silk felt spun by the larva of the above-mentioned on some cognate species, and described to me as covering the rafters and under surface of the floor in a granary at Waterford. The object of the little creatures in this apparent waste of silk is not very obvious, but the *fabric*, so to call it, has long since been known to corn-chandlers, and has received the name of *tela-del-maiz*.—*Edward Newman*].

Food-plant of Anthocharis Cardamines.—As soon as I saw *Cardamine impatiens* again set down as the food-plant of *Anthocharis Cardamines* by Mr. Stainton, in his 'Manual,' I mentioned to that gentleman my conviction that this was an error : he has not, however, altered the statement in the reprint of No. 1, so that he appears still to entertain what I consider a very erroneous opinion : this is only material inasmuch

as the young entomologist is thus led astray, and his search for the larva and pupa of *Cardamines* misdirected to a plant which he would have great difficulty in finding, and which, as far as the observations of my entomological friends and myself go, has never yet fed a larva of *Cardamines*. The food of this insect is the seed-pod of various *Cruciferæ*, and I cannot find that it has much preference for those of the genus *Cardamine*. As this difference of opinion existed between Mr. Stainton and myself, I wrote to Mr. Doubleday, whose reply, in such a point, I presume, will be considered final: here it is. "In reply to your query about the food of the larva of *Cardamines*, I may say that I have found it upon several plants. I believe that *Cardamine pratensis* is the one on which the eggs are most frequently deposited, but the greater part of the larvæ must perish in this neighbourhood, because the fields are mowed before the larvæ are full-grown. I have very often seen the larvæ on the seed-pods of *Erysimum Alliaria*, and have several times found the pupæ on the dead stems of this plant in the winter; I think that it is the principal food-plant of *Cardamines* at Epping: it also probably feeds on *E. barbarea* and other similar plants. Some years ago we used to have a quantity of a large single rocket in the garden, and there was always a number of the larvæ of *Cardamines* feeding on the seed-pods. *Cardamine impatiens* is so local a plant that *it cannot be the common food of the larva of Cardamines*." Those who are practicals in this our study of Entomology will not require the foregoing information; the facts are already sufficiently familiar to them; but there is many a beginner to whom Mr. Doubleday's information will be both new and interesting.—*Edward Newman.*

Remarks on Mr. Buxton's Note on Argynnis Lathonia and Pieris Daplidice.—I very unwillingly send a few lines in reply to Mr. Buxton's communication to the 'Zoologist' (Zool. 5108), and I am sorry to say that I cannot place such implicit confidence in dealers as he appears to do. In saying this I do not mean to condemn them all, as I believe some of them are thoroughly trustworthy, and would not deceive any one; but I well know that too many are exactly the reverse. Hundreds of specimens of the rarer British Lepidoptera are annually imported from the Continent and distributed throughout the country; numbers of pupæ of such species as *D. Galii* and *D. Euphorbiæ* have also been sent over, so that the fact of the insect being exhibited alive is no proof of its British origin. A dealer in London assured me some little time since that a number of specimens of *Orgyia Vau-nigrum* were taken in this country last summer! I quite agree with Mr. Buxton in his remarks about the advertisements on the cover of the 'Zoologist': they should not be inserted unless it was distinctly stated that the specimens were continental; as worded, they are calculated to mislead, like the advertisement about a work on Taxidermy, which, instead of being anything new, is an old and almost useless pamphlet, published at Chatham a dozen years since. The high price which has been paid for British Lepidoptera lately is a great inducement for dealers to import specimens from the Continent, where *A. Lathonia*, *P. Daplidice*, and many of our rarer species, can be purchased at about threepence each. Mr. Buxton alludes to some specimens of *A. Lathonia*, which he had of the late Mr. Seaman, of Ipswich, unset: these specimens were no doubt part of a lot which I know he had in this state from the late John Hoy, Esq., of Higham, who took them on the Continent. Mr. Seaman would not have sold British specimens of this insect at two shillings each: when at his house he showed me rows of *L. Chryseis* and *L. Virgaureæ*, all of which, he assured me, were taken by himself in Britain: I purchased three or four specimens for examination, and upon relaxing

them the wings returned to the position in which they had originally been set upon the Continent. Having mentioned these two species, I cannot help expressing my surprise that Mr. Stainton has admitted *L. Chryseis* into his 'Manual,' and rejected *L. Virgaureæ*: there is just as much ground for considering one to be British as there is for the other, or the difference, if any, is in favour of the latter species, Lewin stating that he once saw two of these butterflies settled on a bank in the fens: there is no doubt that Lewin mistook males of *dispar* for *Virgaureæ*. Haworth gives no locality for either species, and *all* the reputed British specimens of *L. Chryseis* were obtained from a dealer, who gave Epping as the locality, and a more unlikely spot for its occurrence he could hardly have mentioned. Surely we have good reason for being suspicious when a dealer pretends to have taken a conspicuous insect by dozens, year after year, which no entomologist has ever met with in this country. A good deal has lately been said about *Parnassius Apollo*: this is a strictly Alpine species, the larva feeding upon various *Sedums*, and, although it may possibly occur in the mountainous districts of Scotland or Ireland, there is no probability of its ever occurring in England, unless it should be accidentally introduced. As another proof of the care required before admitting species to be British, I may mention that three specimens of a *Phigalia* were sent to me to name, with a statement that they were "unquestionably British," and with two localities were sent: the moment I saw them, I recognised them as specimens taken by a collector in the United States a few years previously, and, upon their being shown to him, he at once said that I was correct: I knew the insect perfectly well as a North American species, and, from the pins and the way in which they were set, I knew who collected them. Since the foregoing was written, I have seen the following sentence in the 'Intelligencer':—"Mr. Buxton is eloquent on the bad habit entomologists have of *only believing the rarities in their own collections to be indigenous*." I can find no statement of this kind in Mr. Buxton's communication, and most positively deny that I ever doubted a species being British because I did not possess it: I know that imposition is extensively practised, and I wish to put young collectors on their guard.—*Henry Doubleday; Epping, May 16, 1856.*

Pieris Daplidice and Argynnis Lathonia.—Since the publication of the last 'Zoologist,' I have received a letter from Mr. Dale, stating that Mr. Miller did not take *Daplidice* near Tewkesbury: the mistake arose from Mr. Miller supposing *Sinapis* to be *Daplidice*. I have also heard from Mr. Doubleday that the late Mr. Seaman had several foreign specimens of *Lathonia* in his possession, taken by Mr. Hoy: this, of course, throws great doubt on any specimens obtained from Mr. Seaman, and I therefore reject them. I have, however, received a letter this morning from Mr. Garrett, in which he says that the number taken by him near Ipswich was *seven* in all, and stating in what collections they are now placed. Of these there can be no possible doubt.—*E. C. Buxton; New Brighton, May 16, 1856.*

[I have great hesitation in saying anything more on this subject, but I wish briefly to refer to one statement in Mr. Buxton's note: it is as follows:—"Mr. Newman (Zool. 5071) declares that the occurrence of *Lathonia* and *Daplidice* is limited in each species to about six cases" (Zool. 5108). I have referred to page 5071, and find nothing on the subject. Will Mr. Buxton oblige me by correcting the reference? If I find I have really made such a statement I will at once retract it.—*Edward Newman.*]

Occurrence of Vanessa Antiopa at Cobham, Surrey.—I have just added to our collection a fine specimen of this rare species: it was taken by a gardener resident in this neighbourhood (from whom I obtained it), in the month of September of last year.—*A. F. Sheppard; Rutland House, Kingston-on-Thames, May 14, 1856.*

Notodonta Carmelita at West Wickham.—It really seems that all our rarer insects are becoming common: in support of this remark I have only to refer to the capture of *Ino Globulariæ*, *Notodonta cucullina* and other *Notodontidæ*, *Ptilophora plumigera*, *Diphthera Orion* and *Plusia orichalcea* within the last year or so: to this list many might be added, and it is now my good fortune to announce the appearance this year in some numbers of the hitherto rare *Notodonta Carmelita*. I have heard of the capture of no less than fourteen specimens, seven of which, four males and three females, we have at the present time under braces. The seven in our possession were taken at West Wickham within the last fortnight. What would have been thought of this six years ago?—*Id.*

Error in the 'Entomologist's Weekly Intelligencer.'—At p. 26 of the 'Entomologist's Weekly Intelligencer,' and subsequently at p. 44, *Ennomos sublunaria* is referred to as the summer brood of *E. illustraria*. I beg to say that *E. sublunaria*, *Steph.*, is a dark variety of *E. lunaria*, as may be seen by reference to the figure on the 28th plate of the 'Illustrations'; the deeply dentate posterior wings will at once distinguish it from any variety of the male *illustraria*. The specimen from which this figure and description was taken, consequently the type specimen of *sublunaria*, is in my collection.—*Edwin Shepherd; May 14, 1856.*

Double-broodedness of Notodonta camelina.—I have carefully perused, analysed and digested Mr. E. Shepherd's article (Zool. 5072) on the double-broodedness of *Notodonta camelina*; but though Mr. Shepherd casts the gravest doubts on my proofs and assertions, and Mr. Newman seems to infer that the bare supposition of its being double-brooded is absurd, I am compelled, with all due deference to the entomological lore of those two veteran knights of the net, to remain unshaken in my former opinion, *viz.* that *Notodonta camelina* is most undoubtedly double-brooded. Mr. Shepherd says that, by "especial care," my eggs of *camelina* produced moths in August, and, interpreting "especial care" by the terms "abundant supply of food" and "want of exercise," he argues that had it not been for this "especial care" the moths would not have emerged till the following spring. Now the facts of the case are these: between the time of my finding the eggs (26th May) and their hatching, which took place in about a week, I did take "especial care" of them, in the hope that they might produce *N. camelita*. A very few days after they hatched, however, I perceived my hope to be fallacious, and recognised them as indubitable *camelina*: after this period "especial care" at once vanished, and, so far from having an "abundant supply" of food, the larvæ were very often, I won't say starving, but on uncommonly short allowance. So that the treatment they experienced, so far from being calculated to accelerate maturity, was likely to retard it, and, in fact, corroborate Mr. Shepherd's own experience in the case of *E. illunaria*. With regard to the want of exercise, I cannot conceive that that has anything whatever to do with the question. The larvæ of all the *Notodontidæ* are extremely sluggish in their habits, and that of *camelina* not the least so, and nothing would astonish me more than to meet a larva of that moth taking its daily constitutional. My larvæ were kept in a cool room, where the windows were constantly open; they were irregularly fed, and no particular care taken of them; and yet they produced moths in August. This appears to me to prove incontestably that

the insect is double-brooded, as there seems to be no reason whatever to doubt that precisely the same result would have occurred out of doors. The birch tree upon which I found the eggs was in full leaf, so that the larvæ would have had no ground of complaint as respects food, and there was nothing in the weather from June to August which would be likely to retard their arrival at maturity. Every entomologist, I believe, allows that *Notodonta ziczac*, *N. dromedarius*, *N. dictæa* and *N. dictæoides* are double-brooded, and that the eggs laid by the second brood in August produce larvæ which are full-grown in October and often November. Why should not the same result, most naturally, take place with *camelina*? I myself have frequently taken the larvæ of *camelina* in November, and have no doubt whatever in my own mind that they were the produce of moths bred in August from a spring brood of larvæ. I am as fully aware as Mr. Shepherd of the premature autumnal development of many of our moths when reared in confinement; but I have strong doubts as to the correctness of the term "premature," and am inclined to think that the same result occurs occasionally in the natural state. I may mention a curious instance, which confirms my suspicion, and also supports an assertion which I made in my article of the 7th of November, 1855 (Zool. 4952), that there was sometimes a very late autumnal brood of *Closteria reclusa*. When staying, a short time since, with Mr. C. R. Bree, of Stowmarket, I saw, in the collection of a neighbour of his, a specimen of *C. reclusa*, which was taken, some little time since, near Stowmarket, quite late in the autumn: the captor, a worthy farmer who collects for his own amusement, was very much puzzled when, upon referring to his books, he found that the insect only appeared in the spring and early part of the summer, and was delighted when I told him that I had bred it in the autumn. I am firmly convinced that much yet remains to be discovered with respect to the breeding of our Lepidoptera; and I cannot conclude this paper, which I have already extended to far greater length than I originally intended, without expressing an opinion that that tendency which seems to be rife among metropolitan entomologists to brand every new opinion propounded by a country entomologist as untenable and absurd, is calculated to do the greatest possible damage to the delightful and interesting science of Entomology.—*H. Harpur Crewe; Pyle Farm, Horndean, Hants, May 13, 1856.*

Do the Males of certain of our Lepidopterous Insects become possessed of an instinctive knowledge of the "whereabouts" of the Females even before the latter emerge from the Chrysalis state?—The following occurrence goes far to convince me that they do. On the 2nd ult. I observed a male specimen of *Biston prodromarius* resting on the trunk of an oak in Cokethorpe Wood, close to the ground. As I happened to be in want of a male specimen, I took this one without noticing its condition, having no doubt, from the very conspicuous situation it was occupying, that it was just "out," for after an insect has once flown it is generally artful enough to conceal itself pretty securely. However, I found on examination convincing proofs that this fellow had been some time on the wing. It soon after occurred to me that very possibly there might be "a lady in the case," and that the object this gentleman had in view in placing himself on that particular spot was that he might be "the first in the field,"—the first to woo the expected fair so soon as she should burst the bands which held her in thrall; for in love, in war, in chess and some other games the first "advance," if not "half the battle," is at least held to be an important step, and of infinite advantage to the party making it. I determined therefore to revisit the spot at proper intervals, if haply my suspicious might prove to be well founded. The

result proved that they were; for before many hours had elapsed a fine female emerged, and was found reposing within a few inches of the identical spot from which the male had been removed. I have, moreover, repeatedly observed numbers of males of *Hepialus lupulinus* hovering about a particular spot, and have often searched in expectation of finding a female concealed among the herbage; I generally, however, failed in finding one; and I have now no doubt that these repeated failures arose, as failures generally do arise, from *not searching deep enough*: had I made deeper search, I am convinced that I should have found the chrysalis of a female *lupulinus* "about to change her condition," in more senses than one. Talk of love-making in one's cradle! Here we have a practical illustration of the art.—*S. Stone; May 8, 1856.*

Capture of Elaphrus lapponicus in Glen Almond, Perthshire.—On the 24th of April, 1856, while enjoying the hospitality of the Warden of Trinity College, Glen Almond, Perthshire, I accompanied that gentleman in a delightful ramble upon the hills to the North of the College, and very near to the slate quarries now being worked by Lord Mansfield I found five specimens of *Elaphrus lapponicus*, one being the variety *splendidus*, *Dej.* I observed *Saxifraga Aizoides* and *Lycopodium Selaginoides*, with other subalpine plants, growing in the wet, oozy ground, over which the insect was running. In a drier situation, but at a lower elevation, upon the same mountain, I observed *Tarus basalis*, *Steph.*—*W. H. Lowe; Balgreen, Edinburgh, May 20, 1856.*

Capture of Lebia crux-minor and Bembidium obliquum at Brighton.—Dr. Power has just shown me a beautiful specimen of *Lebia crux-minor*, being one of thirteen taken by Mr. Hemmings at Holm Bush during the present month; also a specimen of *Bembidium obliquum*, of which he took about a dozen under wet stones at Hove, on the 11th.—*Edward Newman.* Dr. Power has since visited the *crux-minor* station, and captured eight specimens with his own hand.—*E. N.*

Description of the Male of Callinome flavipes.—Having lately bred a male *Callinome flavipes* from an oak-gall, I beg to forward you the description of it:—

CALLINOME FLAVIPES.

Description of the Male.—Brilliant green shot with gold. Head and thorax coarsely punctured, and transversely undulate-striate: these undulating lines, when viewed from the head, looking towards the abdomen, appear like minute imbricated scales, somewhat in the manner of the back of a Chiton (or coat of mail). Abdomen very minutely punctured, with the exception of the basal segment, which is impunctate; green at the extreme base, the rest brilliant purple and gold; the next two segments brilliant purple above and green beneath, the rest to the apex golden green, with the basal portions purple; the whole, except the basal segment, minutely undulate, transversely striate. Femora, anterior and posterior green; their base and apex pale yellow, the intermediate pair with a dusky green stain beneath, their tibiae and tarsi pale yellow; the latter dusky at the apex. Wings beautifully iridescent; the nervures and stigma dark ferruginous; the base of the former pale yellow. Length 2 lines; expanse of wings 3 lines.

These males appear to be very scarce compared to the females; though I have bred a good many of the latter I have never bred a male before. I have also bred, from some of these galls, two specimens of what appears to be *Cynips Quercus-folii*; at least I cannot see any difference between these and some I had reared from galls on the

oak leaves. The galls from which these two emerged are precisely like those from which *C. Lignicola* are bred, and were gathered with the intention of breeding some of them. This is a curious fact, and tends to involve the study of this genus in more confusion than ever, for if the species are not confined to the various parts of the oak, from which the Cynips have received their specific names, then the whole genus is thrown into almost inextricable confusion: this also tends to show that such names as *Quercus-folii*, *Quercus-petioli*, &c., should be used with very great caution, otherwise we shall be creating numbers of species without any *real* distinction.—*Edward Parfitt*; 4, *Weir-field Place, St. Leonard's, Exeter*, May 10, 1856.

PROCEEDINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY.

May 5, 1856.—W. W. SAUNDERS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—‘*Insecta Britannica*,’ Diptera, Vol. iii.: by Francis Walker, F.L.S.; presented by the publisher, Lovell Reeve, Esq. The ‘*Natural History Review*,’ No. 9; by the Dublin University Zoological Association. ‘*Revue et Magasin de Zoologie*,’ 1856, Nos. 2 and 3; by the Editor, Monsieur F. E. Guérin-Méneville. Hewitson’s ‘*Exotic Butterflies*,’ Part 18; by W. W. Saunders, Esq., F.R.S., &c. The ‘*Literary Gazette*’ for April; by the Editor. The ‘*Athenæum*’ for April; by the Editor. The ‘*Journal of the Society of Arts*’ for April; by the Society of Arts. The ‘*Zoologist*’ for May; by the Editor. The ‘*Entomologist’s Weekly Intelligencer*,’ Nos. 2, 3, 4 and 5; by the Editor, H. T. Stainton, Esq. ‘*A Manual of British Butterflies and Moths*,’ No. 3; by the Author, H. T. Stainton, Esq. Four specimens of *Acidalia degeneraria*, and four specimens of *Heliothis dipsacea*; by O. Pickard-Cambridge, Esq.

Election of Members.

Edward Armitage, Esq., 4, Grove End Road, St. John’s Wood, was balloted for, and elected a Member of the Society.

The President stated that the Entomological Society of France had elected Mr. John Curtis one of its Honorary Members; he felt that this recognition of the valuable entomological labours of our late President would be as gratifying to the Society as to Mr. Curtis himself.

Exhibitions.

Mr. Janson exhibited three specimens of a Histerideous beetle, hitherto unnoticed as British, *Heterius quadratus*, *Kug.*, *Eric.*, which he had captured in the society of ants at Hampstead, a single individual, on the 21st of April, 1848, in a nest of *Formica flava*, since which period he had assiduously searched for it every year, but unsuccessfully: on the 4th inst., however, he again met with two examples beneath a stone in the company of *Formica fusca*: he remarked that this insect, which was of

great rarity on the Continent, appeared to be truly Myrmecophilous, and he called the attention of the meeting to the great similarity of form which exists between it and the anomalous genus *Thorictus*, likewise ants'-nest insects, and of which four species were in the box; this resemblance he observed appeared, however, to be rather one of analogy than of real affinity. Mr. Janson added that his mode of obtaining these ants'-nest insects was by placing large stones or bricks in the vicinity of the nests, and carefully examining their under surfaces from time to time.

Mr. S. Stevens exhibited a fine male specimen of *Petasia nubeculosa* recently taken by Mr. Foxcroft in Perthshire, and a remarkably fine specimen of *Aleucis pictaria*, which he had lately taken on Dartford Heath; also *Pentaplatarthrus Natalensis*, male and female, sent by Mr. R. W. Plant from Natal, and observed that these specimens were extremely interesting, from the fact that the sexes of the *Paussidæ* were not previously known; he also exhibited several pairs of a singular *Brenthus*, described by Mr. Westwood in the fifth volume of the 'Transactions' of the Society, p. 206, under the name of *Taphroderes distortus*, and figured on the 22nd Plate of that volume, the left mandible of the male being much larger than the right, and singularly distorted.

Captain Cox exhibited a very large specimen of *Acherontia Atropos* taken in the Hospital at Scutari; also some drawings of the larvæ of British Lepidoptera, beautifully executed by Mrs. Cox: he expressed his intention, on the series becoming more complete, of making arrangements for their publication.

Mr. Bond exhibited specimens of the case-bearing larva of *Coleophora Wockeella*, found on *Betonica officinalis*, in a wood near Canterbury: only five British specimens of this species have hitherto been detected, all found by Mr. Weir near Pembury.

Mr. Stainton exhibited, on behalf of Mr. John Scott, a specimen of *Elachista Tæniatella*, (Zeller), a new British species bred from a larva found last autumn in the leaves of *Brachypodium sylvaticum*; he also exhibited a most beautifully executed engraving of *Lithocletis tenella*, engraved on steel by Mr. Edward Robinson.

Mr. Newman communicated the following:—

Note on Hemerobius variegatus.

I am indebted to Mr. Dorville for the opportunity of offering to the notice of the Society a singular instance of deviation from normal economy in a very familiar genus of insects: he found the pupa shell of *Abraxsas Grossularia* filled with a beautifully white silken cocoon, which he very logically supposed that of a parasite which had destroyed the pupa; but lo! and behold! when the tenant, and indeed the artificer, of the delicate fabric burst its sere-clothes and emerged as an imago, it proved to be a specimen of *Hemerobius variegatus*, an insect in which parasitic propensities are utterly unknown. The inference is that the larva of the *Hemerobius* simply availed itself of the cavernous recesses of the exuviae of the currant-moth as a cosey corner in which to spin its web and undergo its metamorphosis.

Mr. John Curtis communicated the following notes on the economy of *Gonepteryx Rhamni*, by Dr. Maclean, of Colchester, dated 1st May, 1856:—

"On Friday last the bright sunshine tempted me to the woods in search of the eggs of *G. Rhamni*, and not without success, you will say, when I tell you I have above a score of eggs of this insect in my possession: it is my intention to acquire the most

intimate acquaintance with the economy of this *Papilio*. I have no doubt respecting the following account: the eggs are laid in succession from the middle of April to the end of June, but the larger portion during the months of April and May; the larva may be found during the whole of the months of May, June and July: a fine specimen of the perfect insect appears at the end of July, but the greater number during the month of August, then (or many of them at least) live till the following spring, and deposit their eggs on the buds and terminal shoots of *Rhamnus frangula*, so that it is clear the perfect insect occasionally lives a twelve-month; the females have at the present time well developed eggs within them."

Mr. Douglas read a paper, by Mr. Adam White, entitled " Descriptions of an apparently Nondescript Species of *Necrodes*, from Borneo, with brief descriptions of three other species from Northern China and India."

Mr. Smith read a paper entitled " Observations on the Difficulties attending the discrimination of the Species of the Genus *Stylops*," in which he stated that all parts of the body of the male *Stylops* are of so soft and delicate a nature, that in a few hours after death the entire appearance of the insect is changed, becoming a mere shrivelled mass, and in consequence nearly all the published figures of these insects, having been drawn from cabinet specimens, are mere " miserable caricatures :" he expressed his opinion that it may hereafter appear that we have but one species of *Stylops* in this country.

Mr. Westwood thought Mr. Smith's strictures on the published figures of *Stylops* rather too severe; he might at least have made an exception in favour of his (Mr. Westwood's) figures of *Stylops Spencei* in the third volume of the 'Transactions,' which were drawn from the living insect.

Mr. Douglas read from Guérin's 'Revue de Zoologie,' for December last, the following part of a communication made to the Editor by Dr. Richard:—

Epeira Senegalensis.

"The spiders upon which I experimented were taken on a Baobab tree placed in the courts of Gorée, where there was a deal of noise: their number on the tree is such that they are seen from afar when the tree is stripped of its leaves; they appear to live by preference near inhabited places, either, as I have reason to believe, because they like noise, or, more probably, they are kept near to man by the abundance of the insects on which they prey, and which are attracted by the *débris* of human aliments: moreover, it is an extraordinary fact that they persist in remaining upon this Baobab, notwithstanding they may be constantly disturbed by the blacks who collect its leaves (*aloo*) for couscous.* This spider neither stings nor bites: it is only when pressed by hunger that it is disposed to take the flies that are given to it; it swallows them body and wings entire; one of those that I reared swallowed three of them consecutively in

* The leaves of the Baobab are emollient, as in the greater part of the Malvaceæ, to which Order this king of vegetables belongs: they are used in medicine under the name of *aloo*, and the blacks make use of them in the preparation of couscous, to which they add a certain *goût*, and especially the property of gliding more easily, by setting their mucilage at liberty.

less than five minutes, (it had been starved several times): it required some time to teach them to take the living flies that I presented to them on the end of a cleft stick, and to acquire the dexterity of disengaging them without breaking: when at liberty they rush upon the flies caught in their nets, and if they are eatable they carry them to one part of their web where they unite together in enlacing them with their threads. I have made some experiments upon the limit of fasting among these creatures, in order to see if I might hope to transmit them alive to France. Contrary to my expectation, and to the habits of hunting animals, the spiders experimented upon were unable to seize a fly after the fourth day: one of them was put upon the balcony of the house I live in, but its weakness was so great that it could no longer use its feet; thus I left it, hanging by one of its hinder feet: I do not know if it found upon its thread a prey more appropriate to its feeble state than flies, but it recovered and spun its web at the place in which I had put it. I followed with interest the fabrication of this web; I saw that at first the silk was more viscid, dried less readily, was consequently more liable to be soiled, and was lighter coloured than the silk spun at a later period. I studied their movements in order to endeavour to discover in the secret of the web the means of winding off the thread: the large size of the silk, and a ray of the sun, permitted me to follow at a distance this interesting work, but the spider became lost to view when it passed behind the pillars of the balcony, and these interruptions overcame my patience. I learned, however, that it always rests on the same side of the web, and that the latter is composed of two parallel cables formed of several threads (eight or ten), not adhering to each other: these cables serve as a support to a light net-work, as in the web of our river spiders. I remarked that in its work the spider uses its hinder feet in the same manner that the thread-maker and spinner use their fingers; it draws them alternately over the thread which it makes, in order to give it regularity, whilst its fore feet serve to move its body upon the threads already dry. The cocoon was made in a very few days in the month of August: looking at it in the month of January I found two very little spiders, which had very large bodies, and very short and slender feet. I think that it would not be difficult to transport these spiders in such condition that it would be possible to wind off their silk; but even when this result could not be attained absolutely, or within such limits of cost as industrial application admits, it is probable that commerce could use profitably a substance so resistant as this silk, spun like waste silk, and to obtain which all the labour required at the places of its production consists in a simple gathering unattended with danger. Industry, maritime especially, requires a thread which has the qualities of silk, great tenacity within a small compass, less alterable by atmospheric agencies and humidity than vegetable cords, and of which the price would not exceed the requirements of its utility. The spider's silk can be used to supply this want, inasmuch as all hot countries would very soon furnish an important quantity of the rough produce for the requirements of this new industry. We should remember, in this expectation, the predilection of the spider for inhabited places, and its harmlessness to the trees where it establishes itself. Besides, its enemies, the mosquitoes and flies, are also ours, and it is in order to free us from them that it loves to be in our neighbourhood, which is shunned by other animals in a state of nature. This consideration is not so trifling as might be thought: the spiders distributed among the ornamental trees that surround habitations would do much to abate this nuisance in hot and moist countries. M. Margain put a spider upon a young Baobab in his court-yard, and he could tell you the result of this experiment. The silk of the cocoon, by its durability and the bright-

ness of its pale colour, might be employed in fabricating peculiar ornamental stuff, which would be difficult to imitate: the winding off would not be difficult, since the smallness of the meshes of the net-work that it forms is opposed to that in which the spider has been able to entangle its threads in passing to the centre. If the Epeira is reared in sight of the cocoon it will compensate for the drawbacks of a small yield, the space occupied, and the special difficulties of winding, by the beauty of the produce, the quickness of realisation (three or four days), and the absence of care and food during the continuance of the work. The silk of the spider of Gabon excels that of Senegal by the beauty of its deeper colour and by its elasticity, which are in harmony with the frequency and force of the rains of the country. I steeped a piece of the sample I collected in a concentrated solution of azotic acid, without the consistency or the colour being altered: I have not found this spider in society, but it is in the neighbourhood of man, in the garden of M. Reston, an American Missionary, at Bakélé, that I gathered the sample in question."—*J. W. D.*

June 2, 1856.—W. WILSON SAUNDERS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—'An Introduction to Entomology, or Elements of the Natural History of Insects,' by the Rev. William Kirby, M.A., F.R.S., &c., and William Spence, Esq., F.R.S., &c., 7th edition; presented by W. Spence, Esq., F.R.S., F.L.S., &c. 'On the Variation of Species with especial reference to the Insecta, followed by an Inquiry into the Nature of Genera,' by T. Vernon Wollaston, M.A., F.L.S.; by the Author. 'A Natural History of the Animal Kingdom, being a Systematic and Popular Description of the Habits, Structure and Classification of Animals,' by W. S. Dallas, Esq., F.L.S., &c.; by the Author. 'Third Report of the Commissioners for the Exhibition of 1851,' by Her Majesty's Commissioners. 'Proceedings of the Royal Society,' Vol. viii. No. 20; by the Society. 'Revue et Magasin de Zoologie,' 1856, No. 4, by the Editor, M. Guérin-Méneville. 'The Zoologist' for June; by the Editor. 'The Journal of the Society of Arts' for May; by the Society. 'The Literary Gazette' for May; by the Editor. 'Entomologiska Anteckningar under en Resa i Södra Soerige ar 1854,' af Ang. Emil Holmaren; by the Author. 'The Entomologist's Weekly Intelligencer,' Nos. 6, 7, 8 and 9; by the Editor, H. T. Stanton, Esq. 'A Manual of British Butterflies and Moths,' No. 4, by H. T. Stanton; by the Author. 'List of the Specimens of Lepidopterous Insects in the Collection of the British Museum,' Part VII. Lepidoptera Heterocera; by the Author, Francis Walker, Esq., F.L.S.

Resignation of Officers.

The President announced that in consequence of the resignation of Mr. Pascoe, as a member of the Council of the Society, and of Mr. Douglas, of the office of Secretary, the Council, in conformity with the By-laws, recommended Mr. Janson to fill both vacancies, and that the ordinary meeting in July next would be made special for the purposes of the election.

Exhibitions.

Mr. Bond exhibited a specimen of *Biston hirtarius*, having the wings and abdomen of the female, but the antennæ were both deeply pectinated, that on the right side as much so as in the male insect: this singular monstrosity was taken by Mr. Mitford in the Regent's Park, in April last.

Mr. S. Stevens exhibited recently hatched larvæ of *Petasia nubeculosa*, *Notodonta carmelita* and *N. dictæoides*, the first-named species from eggs sent from Perthshire by Mr. Foxcroft, the others from eggs laid by specimens taken by Mr. Stevens at Addington Park during the past month.

Mr. S. Stevens also exhibited a box of insects lately sent home by Mr. Bates from Ega, Upper Amazons, containing, amongst other fine species, *Papilio Pausanias*, *Calilthea Batesii* and *Hætera Andromeda*, also *Megacephala Klugii* and *Megacephala n. s.*, together with a remarkable species of *Cicada*.

Mr. Douglas exhibited *Cryptocephalus Coryli*, taken at West Wickham Wood, May 29th; also *Lebia Crux-minor*, taken by Mr. Hemmings at Holme Bush, near Brighton, May 25th; *Endomychus coccineus*, taken from a dead beech tree, by Mr. G. Harding, at Stapleton, near Bristol; and *Platyrrhinus latirostris* and *Biphyllus lustralis*, from Fungi at the same place.

Mr. Douglas also exhibited the case-bearing larva of an apparently new species of Coleophora, found by Mr. Wailes, of Newcastle, feeding on *Genista anglica*.

Mr. F. Smith exhibited *Platyrrhinus latirostris*, received from Mr. Foxcroft, in Perthshire, where it appeared to have been met with in abundance.

Mr. Westwood wished the Fungi in which this species was found to be examined for the larva, which is yet unknown.

Mr. Smith also read an extract from a letter received by him from a correspondent at Bristol, who stated that a London collector had recently taken five new species of bees in that neighbourhood, which he had sold for £1 each.

Mr. S. Stevens stated that he took a singular larva on *Statice Limonium*, at Sheerness, two years ago, which produced *Agdistes Bennettii*, *Curt.* On the 25th ult. he found four more nearly full-fed larvæ at the same place, and read the following description of the larva and pupa, of which he also exhibited a drawing:—

“ *Larva* green, with two sharp projections on the head and one on the tail, of a pink colour. Feeds on *Statice Limonium* on the coast, and changes to pupa in May.

“ *Pupa* of a dull lead-colour, attached to the plant; changes to imago in about three weeks.”

Captain Cox stated that some time since he found a pupa, apparently of *Smerinthus Tiliæ*, in a cocoon formed of silk and particles of wood, under the loose bark of a plane tree, at a distance of about eight feet from the ground: from the fact of the pupa-case being much smoother than usual, and the above-mentioned singular deviation from the normal economy of this species, he had some doubts as to its identity until the perfect insect emerged.

Mr. Armitage exhibited a box of Coleoptera which he had recently taken in the South of France, containing, amongst other interesting species, *Bolbocerus Gallicus* and *Callicnemis Latreillei*.

The President exhibited some drawings of larvæ and pupæ of Lepidoptera, made in Natal by Mr. Plant, from which he had prepared Plates for publication in the ‘Transactions: of one, a fine new species of *Libesia*, he read a description.

Mr. Adam White communicated descriptions of some apparently undescribed species of Homoptera, from Borneo and Celebes, with drawings of the insects.

Mr. Westwood read some notes on the wing-veins of insects, in which he opposed the views maintained by Mr. Newman on this subject in his paper read before the Society at the June meeting last year.

Some discussion took place on the subject, in which Captain Cox, Messrs. Waterhouse, Baly and others took part.

Field Excursion.

The President expressed his intention to invite the members of the Society to a field excursion at Reigate, during the present month.—*E. S.*

Origin of the name Horse-chestnut.—I beg very heartily to thank the Rev. J. Farr for the extremely interesting fact with which he has made me acquainted, of the singular resemblance to a horse's hoof in the young wood of the horse-chestnut,—a fact quite new to me, and I doubt not to many other readers of the 'Zoologist,' but which is clearly shown in the admirable sketch annexed. At the same time I trust that gentleman will not set me down as obstinate, and unwilling to be convinced, if I state that I still adhere to my former opinion of the origin of the name horse-chestnut, and that I regard the circumstance he describes as a somewhat remarkable coincidence indeed, but as in no degree influencing the specific name of the tree, which, without such adventitious circumstance, I contend would still be entitled to the prefix of 'horse,' in accordance with general custom, to mark its preeminence in size amongst its congeners. Moreover, had the resemblance to a horse's hoof in the joint of the young wood given a specific name to the tree, would it not rather have been designated by our forefathers the 'horse-hoof' chestnut, instead of the horse-chestnut? And again, if this be the true solution of the question regarding the origin of the name, how shall we account for the terms *horse-leech*, *horse-radish*, *horse-mackerel*, *horse-mushroom*, &c., &c.? all of which, though varying so much from one another in nature, exceed their respective congeners in size, and partake of the same specific name, which I humbly submit should bear such an interpretation as is applicable to all. For my own part, I still conceive that this prefix, like others mentioned in my paper (Zool. 5057), denotes size and coarseness, and on this account was given to the coarser species of chestnut; while the curious pattern of a horse's hoof contained in its wood, and the food provided for horses in Turkey by its fruit (as mentioned by Mr. Hussey, and an equally undoubted fact), are coincidences, but nothing more. I may add, in support of my argument, that, in this neighbourhood at least (I know not if the habit exists elsewhere), our villagers apply the term 'horse' to many things to which it does not legitimately belong, if we are guided by dictionaries, using it as an adjective, and intending it to signify bulk or coarseness.—*Alfred Charles Smith; Yatesbury Rectory, Calne, May 28, 1856.*

Amours of the Hedgehog (*Erinaceus Europaeus*).—I was strolling a few evenings since, in the twilight, by the side of a coppice adjoining Cokethorpe Park, when sundry strange sounds were heard to proceed from some animal just inside the coppice. I should not readily have divined the cause of these sounds, by what kind of creature they were emitted, nor what was the occasion that called them forth, had not the game-keeper given me an inkling of the matter from what he had himself witnessed last summer. By the information I obtained from him I was enabled pretty clearly to comprehend the nature of the present case. I judged that the sounds in question proceeded from an amorously-inclined hedgehog; and, wishing to ascertain whether the proceedings of the parties in this case agreed with those he had described to me, I crept softly through the hedge, and cautiously approached the spot from whence the sounds appeared to proceed. A few steps brought me near enough the objects of my curiosity to observe distinctly all that passed between the pair; and their manœuvres, which I shall endeavour faithfully to describe, I found agreed in almost every particular with those previously observed by Jones (the gamekeeper). A circle of about two feet diameter had been formed by the male, round which he was pacing, and giving constant utterance to the sounds which drew me to the spot. Though I can imitate these sounds with tolerable accuracy, I cannot so well describe them upon paper; suffice it to say they differed but little, except in volume, with those puffing, panting sounds which greet the ears of railway travellers when a train is put in motion, and were given off at the rate of about 120 per minute, or two in each second. In the centre of the circle, and of course forming the point of attraction, was the female; and as the male moved round the circle he had formed, she kept turning round, as a wheel placed horizontally is made to revolve upon its axis, by which movement she was enabled to have her eye constantly upon him, and so with most commendable prudence to guard herself against the possibility of a "surprise." Would that all females were equally prudent! At intervals the male would make an advance toward the centre both of the circle and of his hopes, but every time he did so he appeared to be met with an unmistakeable "Now do be quiet," "Don't be rude," "Keep your distance," "Don't you think it," "I won't allow it," &c. &c. Occasionally the female would steal out of the ring, and slip away for a couple of yards or so, always in the same direction, but as often as she left "the magic circle" some irresistible power seemed to draw her back again to it, so true it is that

"Love rules the camp, the court, the grove,
And men"—and women too by Jove!

Its sway is universal; the high and the lofty, the lowly and the mean, every living creature acknowledges its power, all yield willing obedience to its dictates, all readily submit themselves to be bound in its fetters. It was, moreover, observable how that—each time the female quitted the circle—the male at once paused in his rounds, and discontinued the sounds to which he had been giving utterance, till her return, when both sounds and motion were immediately resumed. Love, they say, is blind; and certainly it, or something else, caused the sense not only of sight, but of smell, in this pair to be remarkably obtuse, for I had been standing for nearly an hour, during which time the exhibition I have described was going on, so near them that with two short strides I could have placed my foot in the very centre of the circle without their being apparently at all aware of my proximity. However, at length the female did somehow become aware of the presence of a third, and consequently an unwelcome

party, for she suddenly made straight towards me, and, coming close up, applied her nose to my boot, and then, satisfied that there existed real ground for alarm, made off into the depths of the covert with all possible haste, leaving her disappointed lover to console himself as he best might. He no doubt was soon again upon her track, or she had returned to him, but the increasing darkness rendered further observation on my part impossible. Had it been a light night instead of a dark one, I might perhaps have been in a position to enlighten such of the readers of the 'Zoologist' as required enlightenment upon the point as to the amount of "delicate attentions" a female hedgehog expects before she deigns to bestow her favours,—how much perseverance is necessary, and how great an amount of coaxing and cajoling it is requisite to use before her scruples are removed and she becomes "nothing loath;" but, owing to the abrupt termination of the "interview," I am unable at present to say whether the process of gaining a hedgehog wife be a long, slow and tedious one, as was the late siege of Sebastopol, or not: judging, however, from the fact that little or no progress appeared to be made during the period I watched the pair,—that at the end of an hour's assiduous attention the wooer appeared to be as far from having his desires gratified as at the beginning,—we may safely conclude it to be an exceedingly "slow affair."—*S. Stone; May 12, 1856.*

Occurrence of the Little Owl (Strix passerina) at Maidstone.—A fine specimen of the little owl was lately taken in the neighbourhood of Maidstone, alive, and is so now in my possession: it being a *rara avis*, I thought it would be interesting to ornithologists.—*Whitmore Baker; Maidstone, Kent, May, 1856.*

Rare Birds procured in Norfolk and Suffolk.—Early in May, 1856, a male blue-throated warbler was killed near Lowestoft. About the middle of May a pair of golden orioles were killed at Lakenham, near Norwich. About the end of May a male specimen of the broadbilled sandpiper, in breeding plumage, was killed near Yarmouth.—*J. H. Gurney; Catton Hall, Norfolk, June 12, 1856.*

Remarkable Destruction of Sea Birds on the Norfolk Coast.—On the morning of Sunday, May 11th (after some severe north-east gales), a very large number of sea-birds, recently dead, were observed on the beach in the neighbourhood of Cromer, Norfolk: they were washed up, mixed with sea-weed, and were found lying near the edge of the water in considerable numbers, so much so that a lady counted 240 in the space of not more than two miles: many were gathered for manure, one man collecting four cart-loads, partly composed of sea-weed, but principally of dead birds. I have ascertained that they extended along the beach in the neighbourhood of Cromer for full six miles. I am also informed that many were washed up at Caister, near Yarmouth; and I have no doubt that others may have been found on other parts of the coast, respecting which no information has reached me. I have had some difficulty in ascertaining the exact species of the birds thus destroyed, but, as far as I can learn, they were chiefly foolish guillemots, intermingled with razorbills, puffins and gulls.—*Id.*

Crossbill breeding in the North of England.—The crossbill (*Loxia curvirostris*) has this spring been detected breeding on the banks of the Tyne, a nest, containing three

eggs, having been found near Prudhoe.—*Thomas John Bold; Angas' Court, Bigg Market, Newcastle-on-Tyne, June 10, 1856.*

Golden Oriole near Norwich.—A pair of these beautiful birds were shot about the 11th of last month, at Lakenham. The male is in full rich adult plumage, having probably completed his third year.—*H. Stevenson; Norwich, June 7, 1856.*

Note on the Broadbilled Sandpiper in Norfolk.—A male of this very rare species was killed during last month at Yarmouth: the plumage is apparently in half change.—*Id.; June 3, 1856.*

Late Appearance of the Longtailed Duck and Common Scoter.—An adult male of the longtailed duck, in full summer plumage, was shot on Hickling Broad about the beginning of this month, the first instance I have yet met with of this bird being seen in Norfolk during the summer: the occurrence appears the more remarkable from this species not being numerous on this coast even in winter. Adult birds appear only in very sharp weather. I have just seen in the flesh another adult male of the common scoter, shot on the 11th, at Scotton, where for some days it had frequented a piece of ornamental water.—*Id.; June 12, 1856.*

Note on Savi's Warbler and on a Variety of the Grasshopper Warbler.—A male of this very rare species was shot on the 7th of this month, on the same Broad that has for the last three years afforded me specimens of the grasshopper warbler. The last occurrence of this bird in Norfolk that I am aware of was in 1843, when a pair were killed at South Walsham, one of which is now in the Norwich Museum, together with a specimen taken fifty years ago, the first ever known to have occurred in this county. Although much resembling the reed warbler, this species may be at once distinguished by its larger size and darker feathers on the under parts. I also observe, in this specimen, a number of minute brown spots on the throat, a peculiarity which I have found to distinguish more or less all males of the grasshopper warbler, being perceptible even in a bird of the year. The note of the Savi's warbler has been said to resemble that of the grasshopper warbler, and I may here add that the bird in question was mistaken, by its "creaking noise," for one of the more numerous species. Since writing the above I have received a male specimen of the grasshopper warbler which differs from the general plumage in having a yellow tinge all over the under parts, somewhat resembling the willow wren, whilst the back and wings are also brighter. Out of many specimens I have only once before met with this variety, as in this instance a male bird, somewhat under the usual size. I am at a loss to determine whether this is simply a variety or a plumage peculiar to a certain age.—*Id.; June 14, 1856.*

Occurrence of the Black Stork in Kent.—Being at Lydd, in Kent, on the 21st of May, I saw at the shop of a bird-preserved there, of the name of George Gell, a fine specimen of the black stork, which had been killed, on or about May 5th, at a place called Fairfield Brae, near Brewnet, and but a few miles from Lydd. The account which he gave me of the capture of the bird was the following:—Two labourers had noticed what they supposed to be a very big heron about a certain spot for three weeks: at last one said to the other, "Heron makes an uncommon pudding, let us try to shoot it." The attempt was made and the bird shot, and forwarded by the person into whose hands it fell to Mr. Gell to preserve. The plumage of the bird was very bright, and there were no signs about it of its ever having been in confinement.—*R. N. Dennis; 11, Penrose Terrace, Penzance, Cornwall, May 30, 1856.*

Remarks on Anacharis Alsinastrum as a Food for Swans, and an obstruction to the Free Migration of Salmon. By JOHN J. BRIGGS, Esq.

THE rapidity of growth which this plant exhibits is very extraordinary. The flood which occurred upon the Trent, between Swarkeston Bridge and Weston Cliff, caused by the breaking up of the great frost in February, 1855, cleared the river of this weed, leaving only the roots. These soon sprouted again, and now it is as plentiful as ever. Immense masses disfigure the shallows, and cover the beds of the deeps. I notice that the plant, when propagating in the river, strikes its shoots in a lateral direction, underneath the mud, six inches or a foot from the parent plant, peeps to the surface of the mud, and then spreads rapidly. The manner in which the plant is introduced into new localities is most difficult to explain: some persons imagine that it is spread by wild-fowl which probably feed upon it, the seeds passing undigested through the stomach. But a few years ago it was scarcely noticed in the Trent, and now it exists in the Derwent, as well as in most of the canals and still waters of Derbyshire.

The plant I believe only attracted notice in 1842, and yet I am assured by two gardeners, who have a good knowledge of plants, that they knew it well more than thirty years ago. That they made no mistake in the species I proved beyond question, and yet if the weed has existed in this country for so long a period it seems almost impossible that it should have escaped the notice of our botanists until 1842, and spread with such rapidity since.

The fondness of swans for this plant was noticed at Dunse Castle, where they cleared the lake of every particle of it, and then died off to the original pair. An additional proof of their partiality to it may be gathered from the following circumstance. Some time during last year the plant found its way into the mill-dam at Calke (Derbyshire), from which a small stream (perhaps two miles long) runs into Melbourne Pool: the swans on the pool, having at that time none of this weed in their own water, swam on one occasion a certain distance up the stream (towards Calke Mill), in which some small patches of the weed had gained a settlement: the circumstance of their finding it gradually led them on until they reached the mill-dam, and, finding an abundance of the weed there, they did not endeavour to return to their own pool, but remained for many weeks feeding upon the weed: during their stay the new pest decreased rapidly.

Mr. Barron kindly informs me that the *Anacharis* has been in the lake at Elvaston Castle for more than a dozen years, having been introduced into it by the river Derwent, whose waters supply the lake. It was very troublesome for some years, but is now kept under by having the lake laid dry for a few days during a sharp frost, and again during hot dry weather. A hot sun with a drying wind will kill it to the ground, and if the ground or bottom of the lake be tolerably clean then a sharp frost destroys the roots. It is considered rather unfavourable to fish. In the lake at Elvaston it has not flowered.

At Newark-upon-Trent the *Anacharis* appears to have attracted attention about six years ago ; it was, I believe, first perceptible in the piece of water called "Newark Dyke," which communicates with the Trent.

The following facts may perhaps interest. During the proper season a considerable number of salmon ascend the river Trent from the sea to spawn, and have been taken, under particular regulations, at Newark, Shardlowe, King's Mills, &c. During the last few years scarcely a salmon has been taken at King's Mills, and the park-keeper of the Hastings family (to whom the fishery belongs) thought that some unfair means must have been resorted to, lower down the river towards the sea, to prevent the salmon from ascending. In August last he went to Newark to examine the weirs and nets, but he found that the fishery laws had not been transgressed : he found, however, that the new weed had accumulated in many parts to so great an extent as to produce a general impression amongst those connected with the different fisheries that it prevented the free ascent of the salmon up the river as in former years.

It appears that this persevering weed has located itself in rather a singular situation, viz., the water-tank at the Newark Railway Station. The tank is supplied with water from "Newark Dyke," through pipes 200 or 300 yards in length, which discharge their contents into a well, from which they are raised by steam into the tank. The weed has found its way with the water and gained a firm footing on the bottom, and has become very troublesome. When the tank is cleaned out, again comes the pertinacious stranger and speedily covers the bottom, perhaps a foot thick.

I learn from a Berkshire friend that he first met with this plant near Sonning, three miles from Reading, but has since seen it close to that town, covering the bottoms of the ditches, and *in flower*.

In February, 1855, I had the pleasure of presenting the Society of Natural Sciences of the Canton of Vaud with specimens of the *Ana-*

charis procured from the river Trent, and also some account of its history in this country. Amongst other observations which they elicited from the members, Mr. C. Gaudin remarked that "until recently the plant has only flourished in tranquil places, and that it has only produced *female* flowers." He adds "Elle appartient à la famille des Hydrocharidées, dont nous avons un représentant dans les pays, l'Hydrocharis Morsus-Ranæ des marais de l'Orbe. Richard a décrit dans les Mémoires de l'Institut de 1811, une Anacharis originaire de Monte Video, et dont on ne connaît que les *fleurs males*. Il paraît qu'on n'en connaît pas d'autre, car Endlicher n'en fait aucune mention dans son ouvrage qui a paru en 1841, un an avant l'apparition de la nouvelle Anacharis." Mr. Gaudin adds "It would be worth while to examine if it would be useful to introduce it in our own lake, for facilitating there the trials in pisciculture with which Dr. Chavannes is occupied at this moment. Our lake contains much less fish than the other lakes of Switzerland, because it has not sufficient aquatic plants to furnish to the young fish a shelter from their enemies. There are no places of refuge to protect them against the fishermen, the large fish, storms, &c. It is probable that this plant would also serve for food to different species." *

JOHN JOSEPH BRIGGS.

King's Newton, Swarkeston, Derbyshire,
June, 1856.

Further Results of the Artificial Breeding of Salmon at the Stormontfield Pond.—On Saturday last, in company with two friends, I was present at the emptying of Stormontfield salmon-rearing pond. The keeper having reported to Mr. Buiст that the smolts had nearly all left—the pond being now required for the fry hatched this spring, as they are leaving the hatching-boxes in thousands, and will soon require to be fed—we promised ourselves a great treat, as we were anxious to see what the pond contained, after so many thousands had left it both this spring and last. The pond is emptied by opening a pipe which is placed at the deepest corner, which pipe is taken under ground to within a few yards of the river, which was the height of the Tay in relation to this pipe on Saturday last, the water being discharged on a smooth grassy bank. A wire riddle was put into the centre of the flow, supported on both sides with turf, which caused the water to spread on either side, and sent it thinly and wide-spread over the grass, by which means every fish that left the pond could be seen and counted,

* 'Bulletin de la Société Vaudoise des Sciences Naturelles,' Tome iv. Bulletin No. 56. 1855.

and the smolts arrested and marked by cutting off a corner from the tail. The pond is about four feet deep, and took five hours to run off. For the first hour very few fish made their appearance; but afterwards they came more frequently, and at the last they arrived so fast that a large tub had to be got so as to keep them till time could be had to mark them. Every one was counted as it made its appearance, and, on summing up, it was found that 335 smolts had been marked, and that 872 parrs had been turned into the river. Some of the smolts were as much as eight inches long. When the pond had nearly run dry, it became evident from his struggles that there was a larger fish in the pond than was suspected, and a hunt commenced for the intruder, when he turned out to be a river trout of a pound weight, and subsequently another was caught of similar weight, and two of about half a pound. How these fish got into the pond it is difficult to say; but during the intense frosts in winter the keeper had once or twice to allow the water to come from the lake direct, instead of through the filtering bed, which was frozen. Some small trout fry may by this means have got into the pond, and, from the good feeding, would grow very rapidly. They were splendid specimens of the native trout for shape and fatness. We cut up the whole, and found smolts in all, half-digested in their stomachs, which shows the absolute necessity of having the pond cleared after the departure of every hatching; for, had the young fry at present in the boxes and canal been allowed to enter the pond, a poor account would have been given of the smolts of the two following springs. Besides, a great many small eels were caught in the mud. It is impossible to keep out these intruders, as we caught a few travelling over land with their heads pondward; however, they were all small, and as we have not heard of any large ones having been got in the mud, they could as yet have done little harm. The pond is to be thoroughly cleaued out, and allowed to dry; and when filled the fry will be permitted to enter. The smolts that were turned out, we are persuaded, would have all left in a few days had they been allowed to have their own way, but as to the parrs they would have remained another year. These parrs were of last year's hatching, and were put into the pond by mistake when cleaning out the boxes and canal for this year's hatching. This now completes the history of the ova deposited in the breeding-boxes in November and December, 1853. The experiment from the first to the last has been conducted in a most satisfactory manner, and will ultimately tend to throw much light on the history of that noble fish the salmon; and if our salmon proprietors were alive to their own interests they would set about extending their breeding-boxes and ponds; for the ova deposited in the river in the natural way is subjet to so many accidents that a good crop of fish can never be ensured, which is reduced to a certainty if the manipulation of the ova is entrusted to such able hands as those of Mr. Ramsbottom. Those smolts that have been marked with the ring will be anxiously looked for in July and August.—*W. B.*; *May 26, 1856.*

Vanessa Antiopa.—This spring, in the Isle of Wight, my sister, out walking, marked down an Antiopa. She was gone ten minutes, and on returning found him, motionless, in the same place. A tumbler and card, the only weapons at hand, with a little chloroform, closed the comedy. This is, I suppose, the only instance of Antiopa being taken under a tumbler. It is a good specimen. This spring *Eupithecia consignata* was taken in Suffolk. *Fuliginosa*, the first this year, was taken on the 23rd

April, having come out to see the Review, of which he saw and heard much more than the House of Lords.—*Alex. Wallace* ; 5, *Green Terrace, Clerkenwell, May 3, 1856.*
—[*Intelligencer.*]

Melitaea Athalia ("only in the south," according to the 'Manual') is abundant in one locality in South Staffordshire. I shall be happy to send specimens to any entomologist who may think them worth applying for.—*J. Hardy* ; 43, *Radnor Street, Hulme, Manchester, May 6, 1856.*—[*Id.*]

Daplidice and Lathonia.—In reference to your note at page 5147 of the 'Zoologist,' I find that your remarks on Lathonia and Daplidice do not bear the construction which I unintentionally put upon them. I am very sorry to have made the mistake.—*E. C. Buxton* ; *New Brighton, June 17, 1856.*

Notodontæ not double-brooded.—As Mr. Crewe is still of opinion that his four eggs of *Notondonta camelina*, laid in May, which produced moths in his cage in August, "prove incontestably that the insect is double-brooded," of course it would be useless to argue the matter further. I must beg, however, that he will answer a no doubt very simple question for me. Two or three years ago I had a brood of *N. camelina* hatched in May (about fifty larvæ): all were full-fed in July, and in two or three weeks about a dozen moths appeared: now I can well understand that, according to the double-brooded theory, these specimens were the second brood; but as the greater part of the pupæ remained in that state all the winter, and produced moths the following spring, I am quite at a loss to know which brood these latter specimens are to be referred to: will Mr. Crewe kindly inform me? Mr. Crewe says, "Every entomologist, I believe, allows that *Notondonta ziezae*, *N. dromedarius*, *N. dictæa* and *N. dictæoides* are double-brooded," and "Why should not the same result, most naturally, take place with *camelina*?" I really don't understand such argument as this. If these four species were double-brooded, which I beg most distinctly to deny, I cannot see what effect it would have on the *camelina* question: these species are not very closely allied to *camelina*, but *cucullina* and *Carmelita* are, yet Mr. Crewe dare not venture to assert they are double-brooded: this sort of argument can therefore be used both ways, and after all amounts to nothing. Mr. Crewe mentions an instance of an autumnal specimen of *Clostera reclusa*: nothing is more likely, as the larvæ of this species are often full-fed very early in the summer, but I have had this insect in the pupa state from July till the following May, so the early ones do not always come out in the autumn of the same year. With regard to Mr. Crewe's concluding remarks, at p. 5149, I must be allowed to say that he first cast doubts on my assertions at p. 4899, so in this case it is the country entomologist who commenced the dispute. I cannot imagine that endeavouring to ascertain the truth, or correcting error, will ever damage Entomology or any other science, but, on the contrary, do it the greatest benefit. I am confident that my statements respecting the economy of *camelina* will be supported by every entomologist in the country competent to form an opinion, and am sure that, when Mr. Crewe has been an entomologist a few more years, he will find that four eggs will not make a brood any more than one swallow will make a summer.—*E. Shepherd* ; *June 13, 1856.*

Notodontæ not double-brooded.—I cannot agree with Mr. Crewe that the *Notodontæ* are double-brooded, in the proper sense of the term,—that is, that in a state of Nature there is a brood of moths in the spring from which an autumnal brood is regularly produced, the larvæ of which furnish the brood which appears in the following spring. That specimens of some of the species occasionally appear in the autumn I

am well aware, but they are generally small and faint in colour. I have reared most of the British species from the eggs. I never saw an autumnal specimen of *N. Camelita* (the earliest of any in its appearance), *trepida*, *dictaea* or *dictæoides*. In rearing broods of *N. camelina*, *ziczac* and *dromedarius*, I have generally had a few moths out in the autumn, but the great majority always remained in the pupa state through the winter. Some time since I had a brood of *Cerura furcula*, and a few moths came out before all the larvæ were full grown; the remainder passed the winter in the pupa state, and produced the moths at the usual time in the following spring. I am convinced that rearing larvæ in confinement does frequently affect them in some way. Last July I took a female *Aplecta herbida*, which laid a great number of eggs, all of which hatched in a few days, and the larvæ were all fed together: some of these produced moths in October and November; others remained through the winter in the pupa state, and produced the moths early this spring; and the remainder passed the winter in the larva state, and from these the moths are now appearing. Had this *A. herbida* deposited her eggs abroad, and the larvæ been left in a state of nature, I very much doubt if any moths would have been produced till this month or early in the next.—*Henry Doubleday; Epping, June 16, 1856.*

Note on the Geometrina.—The announcement of the probable appearance of M. Guenée's work on the Geometrina, before many months have elapsed, will be hailed with pleasure, I believe, by many entomologists in this country who know the value of his works, notwithstanding the strictures to which Mr. Doubleday alludes. The only real ground of complaint is the want of descriptions of so many of the species, which deficiency renders the works of this talented entomologist less useful than they might be to those who do not possess an extensive library of entomological authors, or the means of ready access to one. The "generalities," characters of families, genera, &c., are admirable, and well worthy of attentive perusal. I am quite ignorant of M. Guenée's plan of arrangement in the forthcoming volumes, but should almost venture to predict that he will divide the Geometrites into two great phalanges, distinguished by the venation of the posterior wings, as he has already divided the Noctuites. The group, as it at present stands, is in a state of very considerable confusion. Thus *Zerene adustata* belongs to the same section as the *Fidonidi*, *Caberidi*, &c., and, along with *Abraxas*, *Corycia*, &c., should form the subfamily *Zerenidi*, and be placed before the *Caberidi*. *Zerene* or *Mesoleuca albicillata* and *procellata* by no means come in the same genus with *Rubiginata*, which belongs to the *Cidaridi*, and is closely allied to *Electra Pyraliata*, *Polyphasia* and *Harpalyce fulvata*, which should probably be united into one genus, which will however exclude *Chenopodiata* and several others. *Electra Populata* should be congeneric with *Steganolophia Prunata*, while *Harpalyce Galiata* belongs to the *Melanthidi*, and probably to the genus *Melanthia*. *Lozogramma lineolata* belongs to a different section from *L. petraria*, and is probably allied to *Phibalapteryx*, in which genus Stephens formerly placed it.—*R. F. Logan; Duddingston, near Edinburgh, June 13, 1856.*

Note on Dosithea circuitaria of Stainton's Annual.—Mr. Hunter having kindly sent me for examination the *Geometra* taken by himself in London, I find it is a *Dosithea*, and of course totally distinct from *Eupithecia subciliata*: but I still think it is not Hübner's *circuitaria*—it does not at all agree with his figure.—*Henry Doubleday; Epping, June 16, 1856.*

Occurrence of Platypteryx Sicula near Bristol.—This species has appeared again in Leigh Wood, near Bristol. A single specimen was captured last week, by Mr. Bolt, in that locality.—*P. H. Vaughan; Redland, June 24, 1856.*

Habit of Heusimene fimbriana.—April 16. Went to the “Brushes,” with the intention of finding *Heusimene fimbriana*: took it by beating the oaks. Its habit is to fall down, dart down or fly down; unfortunately the last method is the exception, and it requires a really sharp and practised eye to see it fall or dart. When down it lies upon its back, and, on the slightest stir, it gets under the dead leaves by a series of jerks, using its long hind legs as propellers.—[*Intelligencer*.]

Elachista taniatella, Zeller.—This insect, which is new to our Fauna, has been reared by me from the larva found mining the leaves of *Brachypodium sylvaticum* last September and October (see Ent. Annual, 1856, p. 64). It is closely allied to *zonariella* and *gangabella*, but distinguished at once from either of these by its having the cilia of the anterior wings unicolorous. I intend shortly to describe it in the ‘Transactions of the Entomological Society,’ as also *Lithocolletis aucupariella*, bred by me for some years past from the mountain ash.—John Scott.—[*Id.*]

Description of Coleophora Vitisella, a New Species of Tineina.—*Male*: expansion of wings 4 to 5 lines; head and face silvery gray; palpi gray; antennæ long and slender, annulated with whitish silvery gray and dark brown, having about twenty-eight annulations; thorax silvery gray; legs light gray, with darker rings; upper wings silvery steel-gray, cilia long, gray; under wings silvery steel-gray, cilia as the upper wings. *Female*: expansion of the wings 4½ lines; head and face light buffish drab or stone colour; palpi light; antennæ silvery gray, annulated as in the male; thorax buffish drab; abdomen grayish drab; legs silvery drab; upper wings silvery buffish drab, cilia the same colour; under wings as in the male. General appearance of male silvery steel-gray; of female buffish, with silvery steel-gray under wings. Above twenty specimens of this species have been bred by Mr. Hagen, and a few others by myself, from pupæ found in crooked cases attached to *Vaccinium Vitis-Idæa* at the “Brushes.” The larva certainly feeds on the same plant.—C. S. Gregson; Lancashire, June 20, 1856.

Tinea biselliella.—Last week I discovered, to my sorrow, that a couch and sofa of mine were inhabited by thousands of the larvæ of *T. biselliella* (as I think). I happened to be sitting on the couch when I found two or three of these little larvæ on it: on a closer examination I found more, which induced me to open the pillow, when oh! to my horror, I found it stuffed with these disgusting-looking animals. I have had the couch about four years, and never saw the least sign of them before. I then went to look at my sofa, which I have had seven years: I carefully looked it over to see

“ If there was any place
Where flesh and blood could creep,”

and felt sure that this at least was safe; however, I opened the pillow, when

“ Oh! what a spirit-stirring sight
Does to my view unfold,”

thousands of larvæ eating away at my poor unfortunate sofa: I feel sure that they could not get out when in the perfect state, and that they must have been years, most likely ever since the couch and sofa were made, breeding inside. Can you or any of the numerous readers of the ‘Intelligencer’ tell me if it is possible for a moth to live and lay eggs in so very confined a place as inside a sofa or couch?—Arthur Naish; Brooklyn Lodge, Ashley Hill, Bristol, April 28, 1856.—[*Intelligencer*.]

Nomada borealis.—This bee has appeared in unusual numbers this season, and may now be captured at the N.W. corner of Hampstead Heath. I have taken one male

and nine females; a friend has also taken a few. *Andrena Clarkella*, upon which it is parasitic, has also been very plentiful, and may still be found.—*Frederick Smith; British Museum, April 21, 1856.*—[*Id.*]

Uncertain Dates of the Appearance of Insects: Suggestions for keeping a Record of such Dates.—On the 11th of June I saw three specimens of *Gonepteryx Rhamni*, at Holbroke, near Ipswich. Two of these, male and female, were in fine condition; the third, a female, was much wasted. In the discussion last year the Rev. J. Greene stated that he did not believe this insect was ever seen in June, and that the advocates of its double-broodedness must see it fine in June to prove their case. Now I am willing to admit that the present is an exceptional season, in consequence of the cold spring, for, as Mr. Doubleday remarked in a private letter, we see spring and summer insects mixed together. The weather, in fact, has exercised a controlling influence in the development and appearance of the Lepidoptera: but still I think the appearance of insects which are known to hibernate, quite fresh, in the middle of summer, gives a somewhat new direction to our inquiries on the subject of hibernation; it points out clearly, to my mind, that both parties are right,—that part of the autumn brood hibernates, and the rest remain quiescent until the spring of the following year. I saw *Libatrix* at sugar last night, as fresh as possible, and in considerable number. Surely the eggs laid by these late insects will not produce insects in the autumn, appearing at the same time as those which flew in the warm days of April. It is a fair inference that the latter will produce the hibernating specimens, the former those which pass as pupæ through the winter. The influence of weather, confinement and feeding upon the development of insects is a very interesting subject. I do not, however, go the length of ascribing these influences as the invariable cause of the irregularity. Nature has defined her laws, and depend upon it they are not broken so easily as we are apt to imagine. Many years ago I used to remark that *Anthocharis Cardamines* always appeared on or about the 22nd of April: for the last ten years I have seldom seen it before the middle, and this year not till the end, of May. The reason I assign for it is this: the insect and the plant upon which its larvæ feed are equally affected by atmospheric influences: the development of each is promoted or protracted by the same cause, and this beautiful provision is evidently designed to prevent the extermination of species. Every collector knows that in most species the first insects he takes are always males: this is evidently designed, though the cause may not be so obvious. It is more difficult, perhaps, to account for the irregularity in the appearance of larvæ subjected to precisely the same treatment: thus of two cocoons of *Notodonta cucullina*, given to me in the spring, and kept, as they themselves had formed their pupæ-cases, buried in dried grass, one came out June 5th, the other June 18th. Again, insects appear sometimes in different parts of the country at different periods. Thus Mr. Hodgkinson reports having taken *Eurymene Dolobraria*, in Westmoreland, on Whit Monday. I never saw it here—a southern locality—before the beginning of June. My brother took in April one of the dark varieties of *Harpalyce Silacearia*, the *H. insulata* of Haworth. I do not take the light species here till the end of June. For these reasons I think it would be very interesting if collectors would keep a note and publish the first appearance of insects in their particular localities: I will send you a list if you wish it.—*C. R. Bree; Stricklands, Stowmarket, June 20, 1856.*

*On the Manner in which *Vespa rufa* builds its Nest.*

By FREDERICK SMITH, Esq.

IN the first, ninth and tenth volumes of the 'Zoologist,' I published papers on the social wasps of Great Britain; all the known species were described, and many particulars of their economy were added. One object of my present communication is to furnish an answer to a question which has been repeatedly put to me, "How do wasps build their nests?" I have also a second object in view, that of furnishing some additional testimony in refutation of the ingenious theory published under the article "Bee," in the 'Penny Magazine.' Lord Brougham, in the Appendix to his 'Natural Theology,' has ably demonstrated the untenable nature of the hypothesis which is thus briefly characterized:—"It is supposed that the bee first makes cylindrical excavations, which are separated from each other at their contact by the thickness of the wall intended to be formed, and then cuts away so as to make the cylinders hexagonal prisms, the walls being of that thickness."

In the first place we will proceed to show how a wasp's nest is constructed, and, in the next, upon what basis the above theory stands, and we may also then enquire into the value of Buffon's theory of a number of cylinders by pressure upon each other naturally taking the hexagonal form, and so producing the beautiful combs of the honey-bee.

A wasp's nest is commenced by a single female, one of a brood of the previous season, which has passed the winter in a state of torpidity; the warm days of spring arouse her from her winter's sleep, and she issues from her hybernaculum in search of a suitable place in which to commence the construction of the vesparium. Having found some hole or tunnel in a bank, she proceeds to fashion and adapt it to her purpose.

Observing a female wasp (*Vespa rufa*) apparently in search of the entrance to her nest, I watched and observed her enter a circular orifice in a bank; on digging to the depth of about eight or ten inches I came to a chamber about three inches in diameter, in the centre of which was suspended a globular nest, one inch and a half in diameter: the nest was attached by a footstalk to the root of a plant which crossed the top of the chamber; the nest closely resembled in form a half-blown rose, hanging downwards on its stalk; it contained a single comb of cells, which was seven-eighths of an inch in diameter; the number of

cells was thirty-three, in various stages of completeness; four cells were closed by the white silken caps which are spun by the larvæ; seven cells contained each a nearly full-grown larva; nine others had in them larvæ in different stages of growth, and round the margin of the comb were cells containing each a single egg. Having obtained nests of wasps in different stages of formation I am enabled to trace the gradual progress made by the queen as foundress of the colony.

The mother wasp having found or formed a subterranean chamber adapted to her purpose, constructs a footstalk or attachment to a root, or other suitable support at the top of the vaulted chamber: at the end of the supporting column she constructs three or four cup-shaped receptacles; these are, of course, in a reversed position, hanging bell-wise, the depth of each is about the tenth part of an inch. Having proceeded thus far, her next care is to deposit an egg in each: these are hatched in four or five days, depending much upon the temperature of the weather; during the interval, the parent wasp lays the foundation of four or five other cells, and by the time the four eggs deposited in the first instance are hatched, she has the foundation of more cells ready to receive eggs. The larvæ of wasps grow rapidly, attaining their full size in from ten to twelve days, so that as soon as the eggs first deposited are hatched, the labour of the little architect is divided between feeding her young and constructing cells for additions to her family. From the time at which the first larvæ are hatched the wasp commences to give to the superstructure of each cell a regular and beautiful hexagonal form; *with the growth of the larvæ she raises the cells*: no cell is ever finished or carried up to its full height until the larva contained in it is full-grown; the progress of building a cell is to be traced, in many instances, by the different coloured matter used in its construction; great beauty and variety may be observed in many nests, from the wasp having used different coloured woods in the formation of the cells. It will therefore become apparent to every one, that the raising of the walls of the hexagonal cells in a wasp's nest is as regular and progressive as that of a mason erecting the walls of an hexagonal building, time elapsing between the addition of each layer, in the same way as might intervene during the operations of a mason—time sufficient for each additional layer *to harden* and prepare it for the support of further additions to its walls.

On viewing one of these foundation-combs, it will be observed that the outer foundations of cells, or those which occupy the circumference of the comb, exhibit scarcely an approach to the hexagonal form; but, immediately they are raised beyond the cup-shaped foundation, they

assume the perfect hexagon, whilst in the centre of the comb the four or five foundation cells, or those formed at the commencement, are carried upwards in perfect hexagonal forms, the outer walls having the angles of the hexagon, as acute and regular as those which come in contact with the angles of adjacent cells.

We must now carry our mind backwards to the point at which we traced the formation of the footstalk which supports the nest from the roof of the chamber: at the same time that the mother wasp constructs the foundation of the first four or five cells she simultaneously spreads over them a detached covering, exactly represented by an opened umbrella: this covering serves to carry off any wet which might drop from the roof of the chamber, and prevents any particles of dirt from falling on the top of the comb, wasps never allowing any particles of dirt or rubbish to litter their dwellings. As the comb widens, so the labour of increasing the outer envelope proceeds, not in a single sheet, but additional layers are spread over that which at first served to shelter the foundation-cells; by degrees the nest assumes the exact resemblance of a half-blown rose, the successive layers of delicate papery tissue representing in form the petals of the flower.

The materials of which the nests of wasps are constructed are well known to be the scrapings of different kinds of wood, mixed up into a plastic consistency with a liquid or gluten secreted by the wasp; this she spreads out as required with her broad flattened tongue, and for the purpose of collecting the wood scrapings she is furnished with stout denticulated jaws. Great differences will be observed in the nests of wasps obtained in different localities; in some places I have observed nests nearly white, sometimes they are of a gray colour, whilst in another locality they are of a rich variegated brown and yellow. The differences of colour are attributable to the different kinds of wood which prevail in a district, but this only in a degree: it is to the situation in which the nest is found that we must principally look for the cause of the difference. Wasps, as well as many other Hymenopterous insects, exhibit on all occasions a power and will to reason and to act according to circumstances: in intelligence they are far removed from the creatures of blind instinct which some have supposed them to be. If a wasp, *Vespa vulgaris*, for instance, builds her nest under ground, it is necessary that the materials she uses should be very different from those which would suffice were she to build on a beam or shelf, in which situation it would be protected from damp and other casualties to which it would be exposed under ground. Now the wasp is perfectly conscious of this, and selects her materials

accordingly: it is necessary that an under-ground nest should be protected by a series of layers of delicate tissue; this is made of the scrapings of sound timber. The layers are spread over each other, and serve admirably to carry off any droppings of wet, and thus protect the inhabitants of the nest, who would soon perish if exposed to cold and wet, particularly the young brood, which, as well as the perfect wasps, are very susceptible of its influence.

When, on the contrary, the wasp builds on a beam or shelf, there is no necessity to protect the brood from wet, a certain degree of protection from the changes of temperature is all that is required; there is consequently no necessity for the labour required to make a covering of waterproof tissue, which, as stated above, is fabricated of materials obtained by scraping sound timber; a different and far more beautiful covering is constructed of decayed wood, the covering having the appearance of being composed of a number of beautiful light brown shells, having darker transverse bands. These beautiful shell-like formations, when immersed in water, are quickly dissolved, and absorb moisture rapidly; consequently they would not, in any way, answer as coverings to an under-ground nest. As this is well known to the wasp, we may reasonably ask whether the faculty which directs the wasp in these things is not clearly an operation of the mind, and is not the power to construct the beautiful fabrics which we see, a faculty instinctive in the wasp, apart from that which we have been considering above? Not only is her work perfect in all its parts, but it is performed without teaching and without observation; the wasp of to-day is not a more skilful architect than the wasp which constructed her dwelling two thousand years ago.

Having thus briefly sketched the operations of the female wasp in laying the foundation of her colony, and of the manner in which she proceeds in constructing the first comb of the nest, it may perhaps be advisable to state briefly the proceedings which follow in the enlargement and completion of the nest. In the foundation-comb constructed by *Vespa rufa*, there were thirty cells in different stages of completeness; of the eleven which were completed, four were capped by the full-grown larvæ, and seven were about to be closed in, so that in a few days the foundress would have obtained the assistance of four labourers, and seven additional ones in about three weeks afterwards: it is most probable that when this assistance is obtained the mother wasp seldom, or perhaps never afterwards, quits the nest. During the months of July and August a female wasp is seldom seen, and when the colony becomes populous the foundations of

cells must be constructed rapidly, the mother wasp being then occupied in laying eggs alone. Each cell, on the young and perfect wasp quitting it, is cleared out and prepared for a fresh tenant. We have seen that in the foundation of a cell the walls are not raised more than about two lines before an egg is deposited in it, and that the superstructure is raised simultaneously with the growth of the larva. But how does the wasp proceed in the case of a finished cell? the same gifted intelligence which prompted her to choose the situation in which to construct her nest, teaches her, that if her egg was dropped to the bottom the young grub must perish, as the wasps could not get at them to give them aliment; the careful mother therefore attaches the egg to one of the angles of the cell, at the same distance from its orifice as in the case of the foundation of a cell: the young grub on being hatched retains the same position as the egg, and grows downwards instead of upwards. The completion of a nest is a repetition of the above mode of procedure.

Having thus completed a sketch of the manner in which wasps build their nests, we may next endeavour to ascertain to what extent it refutes or supports a few of the more remarkable theories which have been promulgated. It will no doubt appear to many who have not practically studied the subject, that the endeavour to furnish a reason why the bee builds hexagonal cells, from the fact of her eyes, when magnified, being found to consist of a mesh of hexagons, has not only ingenuity but also much apparent probability to recommend it: those who have paid attention to the structure of insects at once reject the inference, since many of the solitary Hymenoptera, having eyes similarly constructed, build circular cells.

To the absurd theory of the hive-bee constructing cylinders, which, pressing upon each other, necessarily take the hexagonal form, the proceedings of the wasp appear to us to furnish a sufficient refutation, had not its untenability been long ago demonstrated. The theory of cylindrical cells being first erected, and then cut away, so as to form hexagons, is quite as definitely met by a negative, when we reflect upon the operation of the wasp: here we see a single individual completing seven hexagonal cells, and laying the foundation of many others, as perfect in their form and as exquisitely finished as if they had been the work of the united labour of a number of individuals: here we have no two wasps working opposite to each other, which has been supposed necessary in the case of the hive-bee. The thickness, form and height of the walls of the cells are all fashioned and erected by the parent wasp, she adapts the

covering of the whole to the situation in which she places her nest: all is effected without the necessity of teaching or of seeing others work in a like manner. The first individual which arrives at maturity performs the same work in the same perfect and admirable manner: the instinctive faculties with which the Creator has endowed them enables them to build the cells in the utmost perfection, and also enables them to select those materials which are best adapted to their purposes.

FREDERICK SMITH.

Hymenoptera obtained from dead Bramble-sticks.—Perhaps the following may be worth insertion, as a useful and encouraging hint to young hymenopterists. Early in March I employed a gardener to go to a locality where I knew brambles abounded to search for pierced withered branches. He returned with some fifty sticks, which I placed in a flower-pot covered over with gauze. Out of these have issued *Ceratina cærulea*, male and female; *Osmia leucomelana*, male and female; *Crabro tibialis* and *C. rufiventris*, male and female; *Trypoxylon attenuata*, male and female; *Chrysis cyanea*, male and female; *Hedychrum auratum*, male and female; &c., &c.—*W. H. L. Walcott; Clifton, Bristol, June 4, 1846.*

Notes on the Genus Haliplus. By JOHN A. POWER, M.D.

I WAS induced to pen the following brief notes on the somewhat difficult genus *Haliplus* in consequence of being frequently applied to by my entomological friends for the species *affinis*, *fluvialis* and *confinis*, which appear to be very general desiderata, but rather in consequence of not being well understood than uncommon. I have recently investigated them with some care, in their *living state* (a precaution too much neglected in these aquatic tribes), at my favourite locality, Cowley, near Uxbridge, and think that a few short remarks as to the mode by which they are to be distinguished may not be unacceptable. I do not pretend to give *descriptions*, for which I would refer to the excellent French Fauna of Fermaire, which cannot be too strongly recommended, but merely propose to point out the salient features by which the more nearly allied species may be diagnosed. I have adopted the nomenclature of the list recently published by the Rev. Hamlet Clark.

A most valuable means of diagnosis, used by Fermaire in establishing sections, is afforded by small longitudinal furrows ("sillons"), one on each side of the thorax at the base, but they often require some tact to observe them, and should be exposed to an *oblique* light. In some species, as in *lineatocollis*, they are very large and curved, in others they are reduced to a somewhat obscure depression, but are constant.

The colour of this genus varies much with the degree of maturity; but the true cinereous or ferruginous tinge which characterizes certain species may always be recognised by a little attention, even in the most immature condition.

HALIPLUS, *Latr.*

1. *H. elevatus*, *Panz.* This species requires no remarks. It is not to be mistaken, from its size, *elevated lines*, the elytra, &c. It is abundant from spring to winter in streams at Cowley; also in the Ravensbourne near Sydenham, and the brooks running into it, &c. &c.

2. *H. mucronatus*, *Steph.*
3. *H. fulvus*, *Fab.*
4. *H. flavicollis*, *Sturm.*
5. *H. variegatus*, *Sturm.*

These four species are nearly allied. They may be distinguished from those which follow by their large size; and especially from *confinis*, *lineatocollis*, *ruficollis* and *fluviatilis*, by the *absence of furrows*.

First, *mucronatus* at first sight, in colour, &c., resembles *fulvus*, but is longer, narrower and more parallel, and has no black lines on the punctate striae. There is a remarkable prolongation of the apices of the elytra internally, but the most prominent difference is in the thorax, which is not so much narrowed in front; posteriorly its sides are nearly parallel, anteriorly they turn a little inwards; whilst in *fulvus*, and also *flavicollis*, they form *right lines*, inclining forwards. Rare. I have taken it only near Cambridge, at Swaffham Prior, and Hornsea Fen.

Secondly, *flavicollis* is distinguished from *fulvus* by its paler immaculate elytra, and by the absence of the ferruginous tint manifest in *fulvus*, even when immature. It is rather smaller and more attenuated behind: *fulvus* has, I believe always, more or less numerous black longitudinal lines on the elytra, sometimes more or less confluent. Both are very common, but *flavicollis* occurs generally in large pieces of water, such as canals. I have seldom, if ever, taken it in small pits.

Thirdly, *variegatus* is at once distinguished from *fulvus* (which it most resembles) by its *tout ensemble*. It is more deeply punctured in proportion, more regularly ovate and *lumpy*, shorter and considerably smaller: small specimens approach to large specimens of *ruficollis*. It is more maculated in blotches, and all my specimens have a remarkable spread-eagle-shaped black blotch, extending backward along the suture from the middle. In *fulvus* the dark lines are seldom confluent to any extent; some specimens are very rubicund, others more pale and yellowish. I fancy the latter are the *subnubilus* of Babington, the former his *rubicundus*. I think that Dr. Schaum has made a mistake (which Mr. Clark's list perpetuates) in referring that insect to *ruficollis* from a *single specimen*, accidentally, I suspect, wrongly named. I have a specimen named *rubicundus* by Mr. Babington himself, which is *variegatus*. Rare to me. I have met with it at Cambridge, New Forest, and once or twice at Wandsworth.

6. *H. affinis*, *Steph.* = *cinereus*, *Aubé*, is at once distinguished from *ruficollis* and from *fluviatilis*, which it resembles exactly in colour, by the *absence of furrows* on the thorax. It has the form of *flavicollis*, but is much smaller, and of a much more pale testaceous-gray. The punctures on the *striæ* are more ingrained with black, having a tendency to form streaks, but *not* maculations. The *punctures are much more numerous*, and four or five deep black impressions at the base of each elytron give a peculiar appearance. Wandsworth; marshes near Notting Hill; Bradgate Park, Leicester; Cowley, in the stream; Bentley, near Alton. Apparently common, but not distinguished.

7. *H. ruficollis*, *Degeer*.

8. *H. fluviatilis*, *Aubé*.

These are the most difficult of the whole genus to distinguish. Both have furrows on the thorax, but are smaller than all the preceding: *fluviatilis*, in its clear testaceous-gray colour, exactly resembles *affinis* (in company with which it occurs in the stream at Cowley), but is at once distinguished *by the furrows*. It has none of the ferruginous tinge which always is present, especially on the legs, even of immature *ruficollis*. It is more strictly oval, less abruptly rounded at the shoulders, and not so suddenly attenuated behind: the elytra look flatter. The difference of form is best seen on the under side. In both species more or less distinct dark lines mark the punctate *striæ*, and these lines in *fluviatilis* are usually interrupted, so as to form two oblique bands on each elytron: they are never confluent, so as to form *maculæ*, which is often, but not always, the case in *ruficollis*.

On looking down the insect, in clean specimens, there usually appears a distinct black sinuated band at the base of the elytra and thorax, not distinct in *ruficollis*. Fermaire says that *fluviatilis* is rather the largest. Both insects vary a good deal in size, and when *taken in series* appear to me of much about the same magnitude, but *fluviatilis*, being *narrower*, looks perhaps *relatively* longer. Lastly, every specimen I ever took has been in *running water*, often in company with *ruficollis*, but I have never taken it in *pits*, in which that insect abounds. These differences may be sometimes individually slight, yet one cannot mistake the *tout ensemble* of two *clean series* compared with each other. I have only taken it at Cowley and Bradgate. Mr. Bold takes it in Northumberland. I suspect it is rather undistinguished than rare.

9. *H. obliquus*, *Fab.*

10. *H. confinis*, *Steph.* = *lineatus*, *Aubé*.

These are at once distinguished from every other species by the *absence of deeply punctate striae*. *H. obliquus* is tolerably constant in its pale cinereous colour, with broad black interrupted lines, more or less confluent: *confinis* is readily distinguished from it by *having thoracic furrows*, which *obliquus* has not; it varies much in colour, from pale cinereous to ferruginous. In one form the dark lines are more continuous, but not confluent: in another, a pale northern variety, they are much interrupted and abbreviated. *H. obliquus* is generally distributed, *confinis* not so common. I have taken it at Wandsworth, Cambridge, Woking, Notting Hill, Rothsey in Northumberland, but sparingly.

11. *H. lineatocollis*, *Marsh*, cannot be mistaken. It has a flat, oval, boat-shaped form, little attenuated behind: colour cinereous: thorax *with a long curved dark furrow* on either side, and a more or less distinct dark mesial line. Common everywhere.

I have stated that several of the more uncommon species may be obtained at Cowley, about a mile from West Drayton. It is one of my favourite localities for water-insects. Some pits and a stream there have afforded me, amongst others, *Hydroporus decoratus*, *vittula*, *nigrita*, *Fab.*, *angustatus* and *memnonius*, a fine series of *Octhebius æneus*, *O. marginipennis*, *Haliplus elevatus*, *affinis* and *fluviatilis*, *Ilybius angustior* and *Orectochilus villosus*; also many good *Brachelytra*, as *Siagonium quadricorne*, *Homalota cuspidata*, *deplanata*, &c., and many *Pselaphidæ*.

The neighbouring locality of Black Park, well known to Lepidopterists, is also worthy the attention of Coleopterists. I took there

one day *Notiophilus rufipes* and other good Geodephaga, with many *Brachelytra*, including eleven species of *Stenus*, a fine series of *Plancus*, &c. The beautiful *Rhynchites cupreus* is abundant on the fruit of the mountain ash.

JOHN A. POWER.

Burton Crescent,
June 13, 1856.

Capture of a Coleopterous Genus new to the British Fauna.—Whilst on a visit, during the last week in April, to Mr. Darwin, at Down, near Bromley, I had the good fortune to meet with a solitary specimen of the Staphylinideous genus *Euryusa*, which has not hitherto been recorded as British. Mr. Janson is of opinion that it is referrible to the *E. acuminata*, described by Mäerkel in the 'Ent. Zeitung' in 1842, though it is of a somewhat paler hue (the result perhaps of immaturity) than that species as indicated in the diagnosis. Like so many of the Aleocharini, it seems to be an attendant upon ants; and it was from beneath a stone, overtopping a colony of the *Formica fusca*, that my example was taken. The chalky slopes in that immediate vicinity would appear to be rich in Coleoptera; for, although nominally not collecting at the time, I noticed several species which I do not often observe elsewhere: I may mention, *inter alia*, *Coprophilus striatulus*; and from beneath a single flint, resting upon a nest of the common brown ant, I captured no less than nine specimens of the *Claviger foveolatus*.—*T. Vernon Wollaston*; 10, *Hereford Street, Park Lane*, June, 5, 1856.

Captures of Cryptocephalus and Agrilus biguttatus.—This summer has already become remarkable by the number of rare Coleoptera taken, and amongst these *Cryptocephalus nitens* holds the most distinguished place. Of this excessively rare species I believe that more than four hundred examples have been taken, and most of them have been beaten off sallows at Cobham in Kent. Dr. Power, perhaps induced by the capture of a single specimen last year, appears to have led the van, and Mr. Baly, Mr. Adams, Mr. Syme, &c., have shared in the labour and the spoil. *C. Coryli* has occurred also in some abundance in the same locality, and has also been taken by beating birch trees at Wickham both by Mr. Douglas and Mr. Ingall. A few specimens of *C. lineola* have occurred at Cobham and Darenth: it has been beaten from birch, whitethorn, and *Clematis Vitalba*, and has been swept off grass. *Agrilus biguttatus* has been beaten at Darenth by Mr. Miller and Mr. Syme.—*Edward Newman*.

Capture of Hydroporus Scalesianus near York.—This pretty little insect, the *H. pygmæus* of Sturm and Aubè, hitherto known as British by a single specimen in the cabinet of the late Mr. Stephens, which was said to have been taken by Mr. Scales near Swaffham, in Norfolk, has been taken in some abundance near York, by the Rev. William Hey, to whose great kindness I am indebted for a supply of specimens. Directly I saw the insect I felt convinced that it was our long-lost *Scalesianus*, but not trusting to my own judgment I sent it forthwith to Dr. Power, the referee from whose decision in such cases there is no appeal, and he at once confirmed my view of

the case. Mr. Hey writes, "I took a good many when I first discovered this insect, but having revisited the spot I find comparatively few. It is curious that for two or three years I have fished the very same bog without hitting on the insect, and that too in the very same spot where I found them. I believe the explanation to be that both *H. Scalesianus* and *H. decoratus*, which I take in company with it, are confined to the margin of the water, this being especially the case with *Scalesianus*: you might fish for hours without taking a single one, and be treading them under your feet all the time: the rain of the last month has caused the water slightly to overflow the mossy grass at the edges of the ponds, and both the species above-mentioned are taken by scraping the net along the grass in the flooded parts."—*Id.*

Ravages committed by Otiorhynchus scabrosus on the Hop.—I have just heard from Mr. Douglas that the great pest of the gardener, *Otiorhynchus scabrosus*, is occurring in profusion in the hop-grounds of Kent, and occasioning great injury to the now rapidly growing hop vine. This formidable weevil, like its conger *O. sulcatus*, is truly polyphagous, destroying the roots in its larva state, the leaves, bark and tender branches in that of imago.—*Id.*

Capture of Carabus intricatus in Devonshire.—This long-wished-for insect has been taken at last: it was taken quite accidentally by Mrs. Hayward, the wife of a brother collector residing in Devonport, on the 18th of June last, in one of our Devonshire woods, about twenty miles from Plymouth: it was lying upon the ground wounded, but still living. Mrs. Hayward brought the specimen to me the following morning, and I immediately recognised it as *C. intricatus* (for *intricatus* don't require any examination); once have a peep at a specimen and you will never forget it: its beautifully cute appearance distinguishes it from all the others of the genus; the very long mandibles, palpi and legs, the deeply relieved striæ of the elytra, and the very acute angle to the scutellum: these points at once show it is the veritable *C. intricatus*. I will here mention, to save speculations as to the probability of its not being that species, that I am acquainted with *C. intricatus*, have seen those in the British Museum, and have found the thorax of three specimens, two in Devonshire in Bickleigh Vale, and one in Cornwall on the cliffs at Whitsand Bay. I sent to Mr. S. Stevens three years ago a thorax, which that gentleman returned to me as belonging to *Carabus intricatus*, so that there is no mistake about the species. The post of killing and setting was assigned to me; chloroform was the life destroyer, and I set it upon card-board with gum-dragon: remember, whoever gets a chance to look at this specimen, that it has no pin-hole, but has a longitudinal crack in the scutellum, but otherwise a splendid perfect specimen; not a tarsus gone. This capture is the most stimulating of the season. It was only in this year's 'Annual' the Rev. J. F. Dawson wrote dispairingly of this species not having been taken for so long a period: it is at least fifteen years since it was taken until now; let us hope that *Diachromus Germanus* and *Chlaenius Agrorum* will in fairness show themselves next spring, they being in some sense colleagues of *intricatus*, but they must be fetched from their country abode; they will not give up a country life for a town one on their own account; it requires some strong, good-tempered individuals, to give these species a fair chance, else we must not talk about their not being there: the likely stations for *Germanus* and *Agrorum* have not had a week bestowed upon them since the days of the lamented Dr. Leech. There is this to be said, however, that species that are common elsewhere and abundant, though found here commonly distributed, are few in number in their natural habitats, which, if applied to the rarer species, make their capture very uncer-

tain, as they are very local and precious few. I have been on the look-out for the last three years for *intricatus*, always expecting to take it at sugar, as I never sugared in Bickleigh without taking *catenulatus* in plenty and sometimes *violacens*, but *intricatus* has not paid me a visit yet; however, I hope some night it will be so obliging.—*J. J. Reading; Plymouth, June 24, 1856.*

Entomological Meeting at Reigate.—The members of the Entomological Society, and friends, were invited down to Reigate by their estimable President on Saturday last; and after a most delightful ramble on the Buckland Hills and the adjoining country, returned at five o'clock to the Swan Inn to a cold collation, kindly provided by the President. There were thirty-eight present, including Drs. Gray, Alexander and Baly; Messrs. Ward, E. Sheppard, Schofield, Grove, A. F. Sheppard, Wollaston, Pickersgill, Pascoe, F. Saunders, Fenning, Marshall, Westwood, F. Smith, A. White, Linnell, Syme, Stainton, F. Walker, Capt. Cox, Edwin Shepherd, S. Stevens, Miers, Hudson, Dutton, F. Bond, S. Waring, Matthew Marshall, E. Janson, Rev. W. Harrison, Vicar of Reigate, Brewer, F. Moore, &c.: some excellent and appropriate speeches were made by the President, Dr. Gray, Mr. Westwood, Mr. Fenning and others. Mr. Fenning proposed the health, in a humorous speech, of the insect of the day, *Callistus lunatus*, or *lunaticus*, as he was pleased to call it, and Mr. Janson returned thanks. Besides seven or eight beautiful species of Orchises gathered on the hills, some scarce insects were captured, including *Callistus lunatus*, *Syncaliptra arearia*, *Drilus flavescens*, *Aphodius 4-pustulatus*, some rare *Staphylinidæ* in Fungi, &c.

—*S. S.*

Capture of Heliomanes Umbellatarum.—I took a stroll last evening with my children into Burnt-ash Lane, and succeeded in obtaining two specimens of that rare little longicorn, *Heliomanes Umbellatarum*, by beating the dead sticks wherewith the gaps in the hedges had been mended.—*J. W. Douglas; 6, King's Wood Place, Lee, June 26, 1856.*

Boxes for the transmission of Insects by Post.—Mr. John Bolt, of Broad Street, Bristol, has sent me a sample box, of his own making, admirably adapted for transmitting insects by post. It is light, and is so firm as to resist a considerable blow with a heavy round ruler; but whether it would maintain its integrity under the sledge-hammer of the official stamper I cannot say.—*Edward Newman.*

Occurrence in Britain of Edwardsia vestita.—I have the pleasure of recording the finding, on the Welch coast, of this very remarkable tube-making Actinoid, hitherto only met with, as far as I am aware, in the Grecian Archipelago, by the late Professor Edward Forbes. I have procured eighteen specimens, some of which are in the aquarium of the Zoological Society in Regent's Park, and others are in my own collection, which I shall be happy to show to any one interested in these matters. The tube is not merely an investment of gravel, small stones, &c., with which *Sagartia bellis*, *Bunodes crassicornis*, and some other Actiniæ are covered occasionally; but it is a true leathery tube, composed of layers of glutinous material and mud, as regular and continuous as that of the *Sabellæ*. The animal is vermiform, and, like other Actiniæ linking the genus with the *Annclida* and *Echinodermata*, the period of

greatest elongation is at night. Some of my specimens have voluntarily left their tubes, and others have been deprived of them by myself; but in each instance they have immediately set to work making others, of the material with which I have supplied them, completing the first or inner coating in a couple of days. Their value as novel inmates for the marine aquarium consists in their excessive hardiness. They continue boldly out and fully opened under nearly all circumstances, and hardly any amount of foulness in the water seems to affect them. I hope to give further details of the habit and anatomy of this exceedingly curious zoophyte in next month's 'Zoologist.' I may also add, that as every week brings me several hundred of living marine animals, chiefly of the lower forms of Invertebrata, new species, fresh varieties, and abnormal conditions are continually being presented.—*W. Alford Lloyd*; 19 and 20, *Portland Road, Regent's Park, London*, June 16, 1856.

Occurrence of the Great Sea-cucumber (Cucumaria frondosa) at Banff.—I had the pleasure yesterday, for the first time here, of receiving from one of our fishermen a very large and most splendid specimen of the above. It was brought up on their lines. It is still alive, but appears a little sickly. When at rest it is fully 16 inches long. It is of a very deep purple in all except the under side, which is grayish. It is a most wonderful and at the same time a most interesting animal. What strange forms and curious shapes it assumes at will! What pen or what language could describe them? Now like a pear, then like a long purse or large pudding; now like two monster and knotty potatoes joined endways; now like a bulb, smooth and no suckers visible; and then, again, as long as my arm, and rough and warty looking. Its tentacula, too! how strange they are! simple to appearance, but yet how complete and how beautiful withal!—But, no! I am not going to attempt it. What strange forms and what beauteous creatures and inconceivable things there are in the ocean's depths! What a pity it is that we cannot traverse its hidden fields and explore its untrodden caverns! I wish I could! What a poor, puny-looking thing the girken (*Ænus lac-teus*) is beside this great king of the Holothuriadæ family! It appears to be a rare species with us, or at least is very seldom met with.—*Thomas Edward*; 13, *Old Market Place, Banff*, June 5, 1856.

Note on a Sea-cucumber in Confinement.—The suicidal propensities of the Echinodermata are traditional. Nothing is more common than to see a star-fish in an aquarium throw off one or more arms, crawl about for a few hours or a day or two, and then die. Less, however, is known of that more obscure family of the order, the Holothuriadæ; therefore some value will be attached to the fact that just five weeks ago (May 9), during my removal from St. John-Street Road to my present place of business, a pet *Pentacta pentactes*, which for many months I have kept in a quart-glass jar, became irritated at the jolting of the cab, and on the following day threw off its head, tentacula and dental apparatus, and then discharged its viscera. These I removed with a pipette, the animal itself lying helplessly, an empty sac, on the sand at the bottom of the jar. As in three days it gave no signs of decomposition, I let it remain; and on the fourth day I found it closely and firmly attached to the side of the jar. Since then it has kept on moving about with as much activity as belongs to its sluggish tribe, sometimes twining among the fronds of *Ulva latissima*, and very often remaining motionless on the side of the glass, at the water's edge. Occasionally, chiefly at night, it drives from its anal extremity a current of water, sufficiently strong to blow the sand into a hole where it happens to impinge upon it. I hope to have to announce indications of renewal of the tentacles in the August number of the 'Zoolo-

gist.' It is interesting to state that the water employed in this case is the artificial compound prepared from the formula of Mr. Gosse, of the entire efficiency of which no severer test can be found. I shall be happy to show my headless and bowel-less friend to any one favouring me with a call.—*W. Alford Lloyd*; 19 and 20, *Portland Road, Regent's Park, London*, June 16, 1856.

NOTICES OF NEW BOOKS.

‘*Annals and Magazine of Natural History*,’ Nos. 101 and 102, dated May and June, 1856. Price 2s. 6d. each. London: Taylor and Francis, Red Lion Court, Fleet Street.

The contents of No. 101 are as follow:—

‘On the British Species of *Arctium*.’ By Charles Cardale Babington, M.A., F.R.S., &c.

‘List of the Mollusca observed between Drontheim and the North Cape.’ By R. M‘Andrew, Esq., F.L.S., and L. Barrett, Esq., F.G.S.

‘Some Account of the Infant Orang Utan.’ By Alfred R. Wallace.

‘On the Theory of the Fecundation of the Ovum.’ By E. Claparède.

‘Another Note on *Scissurella*.’ By S. P. Woodward.

‘On the Occurrence of the Fossil Genus *Conoteuthis*, *D'Orb.*, in England.’ By S. P. Woodward.

‘On the Development of the Fresh-water Sponges.’ By N. Lieberkuhn.

‘On the Development of the Chiton.’ By Professor S. Loven.

‘On the Cell Development in Plants.’ By Professor Arthur Henfrey.

Bibliographical Notices:—‘A Monograph of the British *Hieracia*,’ by James Backhouse, Jun. ‘A List of British Coleoptera;’ by J. F. Dawson and Hamlet Clark.

Proceedings of Societies:—Royal, Zoological, Linnean, Geological.

Miscellaneous:—The British Museum, its Catalogues and Acces-
sions in Zoology. On the Development of the Lampreys; by M. Schultze. Note on *Clausilia Mortilleti*; by Charles Prentice. On a Supposed New Species of the Genus *Equus*; by M. I. Geoffroy St. Hilaire.

The contents of No. 102 are as follow:—

‘On the British Diastylidæ.’ By C. Spence Bate, F.L.S.

‘Description of a New Species of *Sphærium* found near London.’

By Dr. J. E. Gray.

‘Description of Eight New Species of Birds from South America.’

By Philip Lutley Sclater, M.A., F.Z.S., &c.

‘On *Scissurella* and *Schismope*.’ By J. Gwyn Jeffreys, Esq., F.R.S.

‘On the Orang Utan or Mias of Borneo.’ By Alfred R. Wallace.

‘On Professor Huxley’s Attempted Refutation of Cuvier’s Laws of Correlation in the Reconstruction of Extinct Vertebrate Forms.’ By H. Falconer, M.D., F.R.S., &c.

‘Descriptions of Three New Species of *Paludomus* from Burmah, and of some Forms of *Stenothyra* (*Nematura*) from Penang, Mergui, &c.’ By W. H. Benson, Esq.

‘On the Minute Structure of Certain Brachiopod Shells and on Vegetable Cell Formation.’ By William B. Carpenter, M.D., F.R.S., F.G.S., &c.

Bibliographical Notice:—‘General Outline of the Organization of the Animal Kingdom, a Manual of Comparative Anatomy;’ by Thomas Rymer Jones, F.R.S. (second edition).

Proceedings of Societies:—Zoological, Botanical of Edinburgh.

Miscellaneous:—On the Influence of the Soil on the Distribution of Plants; by M. Stur. Note on the Freshwater Dolphins of South America; by M. P. Gervais.

Mr. Wallace’s accounts of the orang utan are extremely interesting, indeed are the only oases in the desert of Science which these two numbers contain. Speaking of a baby orang, Mr. Wallace writes:—“This little animal was probably not more than a month old when I obtained it by shooting its mother, with whom it fell to the ground, apparently uninjured. I found out afterwards that it had then broken a leg and an arm, which, however, mended so rapidly that I only noticed it, a week or two afterwards, by observing the hard swellings on the limbs where the irregular junction of the bone had taken place. When I first obtained it, it was toothless, but a few days afterwards it cut its two lower front teeth. I fed it with rice-water, given out of a bottle with a quill in the cork, which, after one or two trials, it sucked very well. When, however, a finger was placed in its mouth it would suck at it with remarkable vigour, drawing in its little cheeks with all its might, thinking, no doubt, it had got hold of the right

thing at last, and wondering that all its exertions could get no milk out of it. It would persevere for a long time till at last it gave it up with despair and disgust, indicated generally by a very baby-like scream."

The little thing soon got familiar, and tweaked Mr. Wallace's beard most affectionately, bringing tears into his eyes with the excess of its demonstrations. He soon fed the little creature with a spoon, and made its food rather more solid. It would lick its lips, draw in its cheeks, and turn up its eyes in ecstacy when it received a spoonful that was peculiarly palateable.

"In order to give my infant," continues Mr. Wallace, "a little exercise and strengthen its limbs, I contrived a kind of ladder, upon which I put it to hang for a quarter of an hour at a time; but this was not much to its liking, as it could not get all four of its legs into convenient positions. It would hang for some time by two hands only, and then, suddenly leaving go with one, would cross it to the opposite shoulder to catch hold of its own hair, and thinking, no doubt, that that would support it much better than the stick, would leave hold with the other hand, and come tumbling down on to the floor, when it would immediately cross its arms and lie quite contented, for it never seemed hurt by any of its numerous tumbles. I then tried to make a kind of artificial mother for the little creature by wrapping up a piece of buffalo skin into a bundle with the long woolly hair outside, and hung it up about a foot from the ground. This suited it much better, as it could sprawl its legs and arms about wherever it liked, and always find some hair to catch hold of, which its little fingers grasped with the greatest tenacity. But the very success of this plan led to its speedy disuse; it was too natural, and the poor little creature, thinking it had recovered its mother, was continually trying to suck. It would pull itself up close by the strength of its arms, and try everywhere for a likely place, but only succeeded in getting mouthfuls of wool, when of course it would be greatly disgusted, screamed violently, and, if not rescued, would soon let itself fall. One day it got so much wool into its throat that I thought it would have been choked, but, after much gasping, it recovered, and this plan of giving it exercise had to be discontinued.

"After I had had it about a month, it began to exhibit some little signs of learning to run alone. When laid upon the floor it would push itself along by its legs or roll over, and thus make an unwieldy progression. When in its box it would lift itself up to the edge into almost an erect position, and once or twice succeeded in tumbling out.

When left dirty or hungry, it would scream violently till attended to, varied by a kind of pumping noise very similar to that which is made by the adult animal. If its cries were taken no notice of, or no one was in the house, it would lie quiet, but as soon as it heard a footstep near it would recommence with great violence. In five weeks it cut its two upper front teeth, but all this time it had not grown in the least, remaining, both in dimensions and weight, the same as when I first procured it. This was no doubt owing to want of milk or other equally nourishing food. Rice water was a miserable substitute, and cocoa-nut milk, which I sometimes gave it, did not quite agree with its stomach. To this I imputed an attack of diarrhoea which the poor little animal suffered, for which I gave it a small dose of castor-oil, which operated very well, and it afterwards soon became better. It was however again taken ill, and this time more seriously. The symptoms were all those of intermittent fever accompanied with watery swellings of the feet and head. It lost all appetite for its food, and after lingering for a week, a most pitiable object, died, after being in my possession nearly three months."—P. 386.

Mr. Wallace arrives at the following conclusions respecting the orangs of Borneo:—

"1. That two species of orang have been ascertained to exist in Borneo.

"2. The difference between them are well marked in the males, but much less distinct in the females.

"3. That all the females are characterized by the small-sized skull without prominent ridges and by their subtruncated dilated canine teeth.

"4. The males of both species possess large conical canines.

"5. That the form, size and proportions of the crania, and the size and position of the teeth, vary in each individual to such an extent, that these variations alone cannot be taken to mark distinct species.

"Most of these conclusions are fully supported by Prof. Temminck, from an examination of the very extensive series of specimens in the Leyden Museum, though, from not possessing specimens of the smaller male, he was unable to detect any specific difference in the females."—P. 475.

'On the Variation of Species, with especial reference to the Insecta; followed by an Inquiry into the Nature of Genera.' By T. VERNON WOLLASTON, M.A., F.L.S. 206 pp., 12mo, price 5s. London: Van Voorst. 1856.

Mr. Vernon Wollaston is one of that very limited number of entomologists who have ventured to look for something in Entomology beyond the knowledge of differences. No one has studied differences more thoroughly; but the mass appear to regard differences as the end; whereas Mr. Wollaston masters them as the means to some other end, —as the letters by which he is eventually to acquire a more perfect knowledge of the language of Nature. He is not even himself yet master of his great requirings: he states a main object as the desire to induce British entomologists to enlist themselves in the cause of insect geography; whereas he exhibits in every page an unsatisfied yearning after a more intimate acquaintance with all Nature's laws, the distribution of forms being but a branch of the almost boundless study. Rare, indeed, is the union of the talents which Mr. Wollaston has displayed in his entomological career. How many are there who emulate his zeal in acquiring the knowledge of difference, without any idea of making that knowledge subserve an ulterior object! How many lay down laws for Nature with a brilliancy of imagination that dazzles all beholders, but stay not to acquire that rudimentary knowledge of facts by which alone their speculations can possibly be tested!

The present work, as shown by the title, treats of two very different subjects, the "Variation of Species" and the "Nature of Genera." The one has insensibly led the author to the other. In the first Mr. Wollaston is "at home," in the second he is "at sea;" and yet such is the propensity in man to take *omne ignotum pro magnifico* that the second will be admired far more than the first; and the admirers will charge on the non-admirers that very incapability which induces their own admiration. To the man who believes in the hereditary transmission of form, there is a definite idea of species unknown to him who believes his great-great-great-grandfather may have been a plesiosaur or a pterodactyle; but there is no such definite idea connected with the word genus. It is curious to observe that every advocate of what might be called the naturalness of genera has a view of his own as to what a genus is; thus, place on a board a number of scarabæoid, staphylinoid or cerambycoid beetles, and no two coleopterists shall make

the slightest approximation to each other as to what number of species or what type of form shall constitute the genera *Scarabæus*, *Staphylinus* or *Cerambyx*. I would challenge such men as Waterhouse, Power or Wollaston to the task; and the result would show that the terms, and the associations implied by the terms, found a different solution in the mind of each. How, then, can the mass of students, who look up to these stars of the first magnitude for illumination,—how, I say, can they be expected to possess precise and definite ideas on this difficult subject?

Mr. Wollaston's views on the variation and the effects of isolation on species have been previously published in his magnificent work on the insects of Madeira. In the present volume they are repeated, expanded and confirmed. Their discussion occupies 156 pages; then follows the "Generic Theory," occupying 23 pages; and, lastly, a chapter without a title, unless its motto can be regarded as one,

"Depositá sarcinâ, levior volabo ad cælum."

This chapter certainly is very beautiful, and very forcibly brings to mind the glorious hymn with which Thompson concludes his 'Seasons.' It is a "Jamque opus exegi" without its conceit, and proves that Entomology, in the instance of Mr. Wollaston, has had no tendency to contract the power or cramp the energies of a truly noble intellect.

Now let us revert to the "Generic Theory." If the reader take seven pieces of money, of similar size but of different die and metal, and place them on the table before him, one in the centre and six around it, all touching the central coin, he will have some idea of the mode in which a small group of species are naturally associated. If we call the central coin A, B and C shall agree with it in being gold coins; therefore those three must approximate. D and E shall be silver, but agree with A in being coins of Victoria; therefore those three must approximate. F and G shall be copper, but A, F and G shall agree in bearing the same date; those three must approximate. Then there should be a reason for placing C and D and A together, such, for instance, as their bearing George and the Dragon on the obverse. E and F and A agree in some one character, as, for instance, the legend; and G and B and A in another character, as having the margin perfectly smooth. Now, every insect has distinctive characters stamped on it and on its descendants, far more permanent than those on coins; and, unless we accommodate and

harmonise all of them, we can form no idea of Nature's system. This principle of a plurality of affinities, of the radiation, so to speak, of affinities, must be the ground-work for the association of all groups higher than species; and this Mr. Wollaston seems entirely to ignore. Let him speak for himself.

"There can be no doubt that amongst a large class of ordinary observers a clear perception of the generic system in an abstract sense does not by any means prevail. What the nature of a genus really is, would appear to have been very commonly overlooked, or perhaps misunderstood by people of this stamp: and the consequence has been that the wildest notions have frequently arisen, even from men of sound *specific* attainments, as to the claims (for annihilation or retention as 'genera') of certain subsidiary zoological assemblages. The terms 'genus' and 'species' have been conjointly so long associated in our minds with the self-same things (whatsoever they may be), that they have become almost part and parcel of the objects themselves); so that the student who does not sufficiently reflect on their true signification is apt to regard them as of equal importance,—or, rather, more often perhaps than otherwise, to make the latter subservient (or inferior) to the former! This however is, in reality, the very reverse of what should be the case, as a moment's consideration will indeed at once convince us: for what are genera, after all, but dilatations (as it were) along a chain *which is itself composed of separate*, though differently shaped *links*? The links (or the actual, independent bodies which constitute the chain) are the species; but the knobs, or swellings, which their several forms may tend, by degrees, to establish along its course (through the slightest disparity which each of them presents from that which is next in succession to it; and therefore through the gradual manner in which the bulbs or nodules may be said on the whole to be produced), are the groups into which those species naturally fall. It matters not a straw whether these assemblages be primary, secondary, tertiary, &c.,—in other words, whether they be departments, families, or genera, as usually understood,—the *principle* is in every instance the same; the difference being merely relative and not absolute.

"Or, if we choose to vary the simile, we may compare the whole system to a cord, upon which beads, of innumerable sizes, patterns, and colours, have been densely strung. Now, if there were no such things as natural divisions in the organic world, these beads (which represent the separate species) might have been disposed of anyhow,—their positions with respect to each other would under those circum-

stances have been of no importance. But such is not the case: there is an order and method throughout Nature, which shows that every individual portion of it has been adjusted by the Master's hand, and that nothing has been left to chance. Those beads (to follow up the metaphor), of countless magnitudes and hues, have had their proper places allotted to them,—and moreover with such care and regularity, that a complete plan or scheme of distribution is at once conspicuous. Although there are not even two amongst that enormous multitude which are *precisely* alike (for every species, however it may resemble its next ally, has *some* distinctive feature of its own), we immediately perceive that those beads which have most in common are, as it were, attracted to each other,—so as, by their close approximation, or contact, to create excrescences and stripes, of divers kinds, along the entire length of the cord. If we assume now that the red beads have been collected together to the length (for instance) of a yard, and that within that space a dozen protuberances, of discordant aspects and dimensions, have (by the union of those beads which more nearly simulate each other) been brought about, we shall have a very fair idea of the ordinary grouping of the animate tribes. The red beads, taken in the mass, may be likened to a perfect 'family'; the different gibbosities to twelve well-marked 'genera,' which that family includes; whilst the 'species' (the real *dramatis personæ*, of independent existence, which are nevertheless compelled to occupy the situations we have described,—thus *causing* the divisions to be mapped out) are here typified, as everywhere, by the several beads themselves."—P. 160.

From this quotation it is quite clear that, whatever may be Mr. Wollaston's avowed opinion on the naturalness of a linear series, all his thoughts tend to an acknowledgment of the existence of such a series; and, therefore, that, if the theory of a plurality of affinities be true, then all definitions having reference to a line or string of beads must be fallacious.

Notwithstanding this antagonistic view of the theory of genera between Mr. Wollaston and myself, I cannot close the book without saying that I found it deeply instructive; nor can I refrain from heartily recommending it to the readers of the 'Zoologist,' as one abounding in truthful observation, and well deserving a most studious perusal.

There is a peculiarity in Mr. Wollaston's style that might easily be amended: the too-frequent use of parentheses, not only as exhibited by printer's signs, but in the context, which every now and then halts

through this peculiarity. This, it may be said, is hyper-criticism; but, gentle reader, fear not for thyself, if an entomological scribe: it may be quite excusable in thee.

‘*The Natural History of Ireland.*’ In Four Volumes. Vol. IV.

Mammalia, Reptiles and Fishes; also Invertebrata. By the late Wm. THOMPSON, Esq. London: Henry G. Bohn, York Street. 1856.

The early death of William Thompson was an event sincerely deplored by every naturalist in the United Kingdom. He was taken from us in the very prime of life, and in the very zenith of his useful career. He seems to have had a constant presentiment of the sudden termination of his labours,—to have been fully aware that his life would not be prolonged until the completion of his fondly cherished object, the publication of a complete Natural History of Ireland. In this spirit his will provides that “in the event of his decease before the publication of his work on the Natural History of Ireland shall have been completed, it is his wish that the whole of his manuscript relating thereto shall be handed over to Mr. Robert Patterson and Mr. James Garrett, both of Belfast, with a request that they would undertake the duties of superintending editors of the same, in order that the whole be carefully published;” and, again, the will goes on to say, “Should I die before these volumes are prepared for the press, it is my express desire that none of my notes be printed without having undergone *rigid correction*,” adding, “I have always written so hastily and carelessly.” These gentlemen undertook the task of editing poor Thompson’s MSS.; but one of them, Mr. Garrett, died considerably before its completion. The survivor, however, subsequently enjoyed the co-operation of Dr. Dickie and Dr. Ball.

The circumstances here detailed,—the presentiment of death and its sad fulfilment; the literary bequest to his friends; the “express desire for rigid correction;” the acknowledgment of “haste and carelessness,”—are highly important elements in the publication; and we think that they disarm the critic, as far as Mr. Thompson’s own labours are concerned; but we think, also, that the editors would have shown far more regard to the testator’s fame had they complied literally with his request, and submitted the whole of the MSS. to a much more rigid and laborious correction than it appears to have

received. In fact, we do not hesitate to say that the work appears deteriorated and confused in its passage through their hands. Thus, the Mammalia are divided into sections and orders, all of them numbered and named; but the deer are placed under Glires, an order which, thus augmented, is made to intervene between the Canidæ and the Phocidæ. Again, the class Reptilia begins with a heading in capitals, TESTUDINATA; the first species noticed being the logger-head turtle, the second the common lizard; and this is followed by a heading, TURTLE; and a species is noticed, supposed to be the snapping turtle. Then follows a heading, Ophidia; and under this range the blind worm, the ringed snake, the common viper, the common frog, the common toad, the natterjack, the warty newt, the smooth newt, and the palmated smooth newt. Such is the commencement of the volume; and the same want of care pervades the whole. Some light may be thrown on this jumble by a reference to Mr. Patterson's Preface. He says:—"On examining the mass of papers placed in our hands, we found those relating to the principal divisions of the animal kingdom carefully separated from each other, and the materials for each of the minor groups in separate covers. Within these, smaller envelopes were placed, each appropriated to one species. So far nothing could be more methodical or more complete—the families, genera and species were arranged in regular sequence, and, of course, any particular one could immediately be found." We may easily suppose that a note on the red deer got accidentally slipped into the same envelope as one on the dormouse; that a note on the lizard got between two on turtles; that one on the frog was accidentally placed in an envelope marked Ophidia. But such malpositions must have been the result of the merest accident, and cannot be regarded as exhibiting any intention on the part of the writer. It was the obvious duty of the editors to amend such errors. Were they not appointed for this very purpose?

Having made this preliminary observation, applicable only to the mode in which the volume is got out, and not at all to its intrinsic value, it becomes necessary to state that the work abounds in useful material for the compilation, at some future day, of a Natural History of Ireland. The account of each species appears quite as a detached paper, and has little or no reference to the context preceding or following. Many of these detached papers, perhaps I might say all of those which are carefully worked up, have appeared, from time to time, in the pages of periodicals. Thus, the paper on the Irish rat (*Mus hibernicus*) appeared in the 'Zoological Journal' for 1837, at

which date Mr. Thompson wrote of it as a species; in 1850 it is mentioned as " *Mus Rattus?* " in 1851 as " black rat with white spot on the breast." This little summary shows the readiness with which Mr. Thompson altered or amended his views, when he saw reason for doing so. The paper on the Irish hare was published in the 'Transactions of the Royal Irish Academy' for 1838; that on *Echiodon Drummondii* in the 'Proceedings of the Zoological Society' for 1837; and a great number of others in the 'Annals and Magazine of Natural History.'

Mr. Thompson left nothing relating to insects, except a statement of numbers, communicated to him by Mr. Haliday. This having been prepared so long since as 1843, the editor of this volume has done well in applying to Mr. Haliday for a more recent census; and that eminent entomologist has furnished a digested table of the number of known species brought up to the present day. This is peculiarly valuable, both as furnishing an approximation to the real extent of the Insect Fauna of Ireland, and also as exhibiting Mr. Haliday's matured and most recent views on the subject of classification. We have no hesitation in extracting it entire.

" COLEOPTERA, 929 species, as under.

" *Stylopidae* 2, *Mordellidae* 4, *Cantharidae* 2, *Anthicidae* 1, *Salpingidae* 3, *Edemeridae* 3, *Lagridae* 1, *Pyrochroidae* 1, *Melandryidae* 3, *Tenebrionidae* 10, *Chrysomelidae* 81, *Donacidae* 10, *Cerambycidae* 13, *Cucujidae* 149, *Hylesinidae* 6, *Bostrichidae* 1, *Cetoniidae* 1, *Rutelidae* 1, *Melolonthidae* 4, *Geotrupidae* 5, *Copridae* 2, *Aphodidae* 22, *Trogidae* 1, *Lucanidae* 1, *Ptinidae* 10, *Cleridae* 3, *Melyridae* 3, *Lampyridae* 19, *Cyphonidae* 7, *Dascillidae* 1, *Elateridae* 17, *Buprestidae* 1, *Heteroceridae* 3, *Byrrhidae* 3, *Dermestidae* 4, *Trixagidae* 1, *Mycetophagidae* 1, *Cryptophagidae* 23, *Colydidae* 1, *Cucujidae* 1, *Nitidulidae* 26, *Phalacridae* 2, *Engidae* 2, *Lathrididae* 13, *Endomychidae* 2, *Coccinellidae* 15, *Corylophidae* 4, *Clambidae* 3, *Anisotomidae* 8, *Silphidae* 23, *Scydmaenidae* 5, *Pselaphidae* 9, *Staphylinidae* 91, *Histridae* 10, *Hydrophilidae* 45, *Elmidae* 5, *Gyrinidae* 6, *Dytiscidae* 65, *Carabidae* 153, *Cicindelidae* 1, *Trichopterygidae* 16.

" NEUROPTERA, 243 species, as under.

" *Forficulidae* 2, *Locustidae* 8, *Gryllidae* 1, *Achetidae* 1, *Blattidae* 1, *Lepismidae* 4, *Poduridae* 22, *Liotheidae* 9, *Philopteridae* 47, *Psocidae* 10, *Perlidae* 10, *Ephemeridae* 7, *Libellulidae* 7, *Æschnidae* 3, *Agrionidae*

15, Phlæothripidæ 6, Thripidæ 34, Semblidæ 1, Hemerobidæ 18, Coniopterygidæ 2, Phryganidæ 35.

“ **LEPIDOPTERA**, 645 species, as under.

“ **Pterophoridæ 7**, **Crambidæ 13**, **Tineidæ 116**, **Tortricidæ 86**, **Noc-tuidæ 142**, **Pyralidæ 26**, **Phalænidæ 139**, **Bombycidæ 51**, **Hepialidæ 6**, **Sphingidæ 21**, **Hesperidæ 2**, **Papilionidæ 36**.

“ **HYMENOPTERA**, 1247 species, as under.

“ **Tenthredinidæ 111**, **Siricidæ 1**, **Ichneumonidæ 223**, **Braconidæ 325**, **Fænidæ 1**, **Proctotrupidæ 43**, **Scelionidæ 81**, **Ceraphronidæ 17**, **Cyniphidæ 39**, **Chalcidæ 263**, **Mymaridæ 35**, **Chrysidæ 1**, **Dryinidæ 17**, **Bethyllidæ 1**, **Pompilidæ 8**, **Sphegidæ 1**, **Crabronidæ 18**, **Eumenidæ 2**, **Vespidæ 3**, **Apidæ 45**, **Tormicidæ 12**.

“ **DIPTERA**, 1130 species, as under.

“ **Hippoboscidæ 4**, **Phoridæ 17**, **Oestrudæ 3**, **Muscidæ 494**, **Conopidæ 3**, **Syrphidæ 80**, **Pipunculidæ 8**, **Platypezidæ 7**, **Lonchopteridæ 4**, **Dolichopidæ 105**, **Empidæ 80**, **Scenopinidæ 2**, **Bombylidæ 7**, **Asilidæ 3**, **Leptidæ 7**, **Tabanidæ 4**, **Stratiomidæ 22**, **Rhyphidæ 3**, **Heteroclitæ 6**, **Tipulidæ 78**, **Phlibotomidæ 16**, **Culicidæ 11**, **Chironomidæ 60**, **Simulidæ 4**, **Bibionidæ 25**, **Cecidomyzidæ 15**, **Mycetophilidæ 52**, **Pulicidæ 5**.

“ **HEMIPTERA**, 246 species, as under.

“ **Coccidæ 10**, **Aphidæ 53**, **Psyllidæ 30**, **Fulgoridæ 6**, **Cercopidæ 41**, **Notonectidæ 10**, **Nepidæ 1**, **Gerridæ 8**, **Hebridæ 1**, **Cicericidæ 9**, **Tingidæ 7**, **Redervidæ 3**, **Capsidæ 34**, **Coreidæ 4**, **Anisoscelidæ 3**, **Lygeidæ 10**, **Penlatomidæ 9**, **Scutelleridæ 1**, **Pediculidæ 6**.

“ Making a total of 4440 species named in our collections, but subject no doubt to much correction as to names. * * * The families are not in very good order, and many are kept which would be better sunk in neighbouring families ; but the enumeration helps to show the local distribution of groups the better.—A. H. H.”—P. 365.

‘*The Natural History Review.*’ No. XI., dated July, 1856. Price 2s. 6d. London, Williams & Norgate; Dublin, Hodges and Smith; Edinburgh, Williams & Norgate.

The eleventh number of this useful and improving Journal contains the following papers:—

REVIEWS.—‘Popular History of the Palms and their Allies;’ by B. Seemann. ‘On the Variation of Species;’ by T. Vernon Wollaston. ‘Natural History of the Animal Kingdom;’ by W. S. Dallas. ‘June: a Book for the Country in Summer Time;’ by H. T. Stainton. ‘Shells and their Inhabitants;’ by H. and A. Adams. ‘Introduction to Entomology;’ by W. Kirby and W. Spence: seventh edition. ‘A Re-arrangement of the Nomenclature of British Coleoptera,’ Part I. Geodephaga—Phylhydrida; by J. F. Dawson and Hamlet Clark. ‘The World of Insects: a Guide to its Wonders;’ by J. W. Douglas. ‘Practical Hints respecting Moths and Butterflies;’ by R. Shield. ‘Manual of Entomology,’ Vol. III.—IV.; by Hermann Burmeister. ‘The Natural History of Ireland,’ Vol. IV.; by the late William Thompson.

SOCIETIES.—Dublin Natural History Society:—Remarks on the Fungi of the South-west of Ireland; by W. Andrews, Esq. On the Genus Skua; by Chas. Farran, Esq., M.D. On the Occurrence of Rare Birds in Ireland; by Lord Clermont. On *Asplenium Trichomanes*; by W. Andrews, Esq. On the Occurrence of the Egyptian Goose (*Chenalopex Egyptiacus*) in Ireland; by R. J. Montgomery, Esq. Remarks on some Birds that usually visit Ireland; By J. R. Kinahan, Esq., M.B. On the Natural Affinities of the Genera *Botrychium* and *Ophioglossum*; by J. R. Kinahan, Esq., M.B. Sparolegnia Ferox attacking Gold Fish in Vivaria; by Dr. Frazer. Change of Colour in a Fowl; by R. P. Williams, Esq. Journal of the Dublin Geological Society:—Report of the Council for the year 1855. Donations to the Library since February, 1855. On the Geology of the Lake District of Killarney; by Geo. V. Dukoyer, Esq. Researches among the Palæozoic Rocks of Ireland, with a view to determine the Limits of the Old Red Sandstone, and its Relation to the Inferior Rocks; by John Kelly, Esq. Tabular List of Localities in Ireland where Junctions occur of Old Sandstone with the Rocks that lie beneath it; by John Kelly, Esq. On the Lower Carboniferous Beds of the Peninsula of Hook, County of Wexford; by the Rev. Saml. Houghton, M.A., Professor of Geology in the University of Dublin.

SERIALS.—*America* :—‘Smithsonian Contributions to Knowledge,’ Vol. VII. ‘American Journal of Science and Arts,’ Vol. XXI. ‘Canadian Journal,’ New Series, Parts I. and II. *Russia* :—‘Bulletin of the Moscow Society of Naturalists,’ Vol. XXVIII. ‘Archives of Natural Science for Livonia, &c.,’ Series 1, Vol. I. Part 1, and Series 2, Vol. II. Part 1. *Germany* :—‘Transactions of the Imperial Academy of Naturalists, Suppl. to Vol. XXIV., and Vol. XXV. Part 1. ‘Transactions of the Berlin Academy’ for 1854. ‘Journal of Scientific Zoology,’ Vol. VII. ‘Archives of Anatomy and Physiology’ for 1854 and 1855. ‘Transactions of the Imperial Geological Institute.’ ‘Annual (Report?) of the Imperial Geological Institute.’ ‘Journal of German Geological Society,’ Vol. VI. Part 4, and Vol. VII. Part 1. *Switzerland* :—‘New Memoirs of Swiss Society of Natural Science,’ Vol. XIV. ‘Bulletin of Vandois Society of Natural Science,’ Vol. IV. No. 32—35. ‘Memoirs of Genevese Society of Natural History, &c.,’ Vol. XXIV. Part 1. *Holland* :—‘Journal of Natural Science for Dutch India,’ Part. III. No. 3—6. *France* :—‘Archives of the Museum of Natural History,’ Vol. VIII. Part 3. ‘Bulletin of the Geological Society of France,’ Part XIV. *Britain* :—‘Edinburgh New Philosophical Journal,’ No. VI. ‘Annals and Magazine of Natural History,’ No. C.—CI. ‘Quarterly Journal of Microscopical Science,’ No. XV. ‘Zoologist,’ No. CLXII.—CLXIV. ‘Transactions of the Entomological Society of London,’ New Series, Vol. III. ‘Note on Mr. Newman’s Memorandum on the Wing-rays of Insects.’ Hooker’s ‘Journal of Botany,’ &c.. No. LXXXVII.—LXXXIX. ‘Phytologist,’ New Series, No. XII.—XIV.

In the notice of my ‘Memorandum on the Wing-rays of Insects’ Mr. Haliday has some very amusing remarks. Although the paper is anonymous, I fix at once on Mr. Haliday as the author, because the necessary erudition and the power of writing such good English are not combined in any other living entomologist. I should perhaps attempt a reply in the same good-natured strain, but that neither my views nor Mr. Haliday’s strictures thereon appear in the pages of the ‘Zoologist.’ One point, however, admits of a comment: Mr. Haliday tells us he rubbed his eyes because I suggest the name of “ray” for a part which I conceive to be the analogue of “bone.” I may inform Mr. Haliday that it is a dangerous experiment to transfer the name of parts from an endosteate to an exosteate structure. Thus, when the late popular Professor of Zoology in King’s College called the antennæ of insects “ears,” there were very disagreeable

allusions to long ears, repeated *ad nauseam*; and even the learned Kirby, when he called a certain part of an insect the "nose," was not secure from witticisms having an occult reference to the Pope of Rome. Therefore, although the use of the rays may be supposed precisely identical with that of bones, still the term "bones" would be a dangerous one to adopt. The hay-making machine performs the work of a dozen women; but it would be rather an innovation to call it "twelve women." When Mr. Haliday has given his eyes another rub, we shall, I am sure, agree on this question, as we already do on the affinities of *Stylops*, *Thrips* and *Pulex*. I have trusted to inquiry alone, and not to repetition, for the confirmation of my views.

Entomological Botany (with more especial reference to the Plants frequented by the Tineina). By H. T. STAINTON, Esq.

(Continued from page 5139).

Crataegus Oxyacantha. Hawthorn.

Few plants are more extensively patronized by the insect tribes than the hawthorn. It has not, it is true, as many admirers as the oak; but compare the size of the hawthorn bush with the oak tree, and it will be found that the former, in proportion to its size, affords pabulum to a larger number of species.

Speyer enumerates the following species as feeding on the hawthorn:—*Aporia Crataegi*, *Porthesia auriflava*, *Gastropacha quercifolia*, *Lasiocampa Quercus*, *Trichiura Crataegi*, *Pœcilocampa Populi*, *Eriogaster Lanestris*, *Clisiocampa neustria*, *Diloba cæruleocephala*, *Acronycta Psi*, *A. tridens* and *A. Euphrasiæ*, *Amphipyra pyramidea*, *Miselia culta*, *M. Oxyacanthæ*, *Catocala paranymptha*, *Rumia Cratægata*, *Ennomos lunaria*, *E. illunaria*, *E. illustraria*, *Chlorochroma viridata*, *C. bupleuraria*, *Hibernia defoliaria*, *H. aurantiaria*, *H. leucophearia*, *Nola cucullatella*, *Tortrix lœvigana*, *Myelois avenella*, and *Scythropia Cratægella*. (The species of which the names are in Italics have not yet been found in this country).

It must, however, be evident, at a mere glance, that this is only an infinitesimally small portion of the actual number of hawthorn-feeders. Speyer only mentions one *Tinea*; and if we find, on closer scrutiny, that instead of one there are already 24 species known

as feeding on the hawthorn, will not the inference be strong that the *one* *Tortrix* might be multiplied in a similar proportion.

In going through the *Tineina* systematically we find that the very first species, *Exapate gelatella*, is, according to the observations of Madame Lienig, a hawthorn-feeder. The next hawthorn-feeders we come to are the two *Swammerdamiæ cæsiella*, and *Pyrella*. Both are lively larvæ, feeding in webs on the surface of the leaves. *Scythropia Cratægella* is on several accounts an interesting species, of which it was only during the last month that I made the personal acquaintance in the larva and pupa states. The larva is gregarious; that is, where you find one you will generally find a hundred at least. They make slight webs along the branches of the bush on which they reside; and the bush, from the number of brown, half-eaten leaves, has a blighted appearance. The larvæ are very sluggish, and cannot easily be made to run; thus they differ very greatly from the larvæ of the genus *Swammerdamia*. The pupa is suspended loosely in the common web, and, as is frequently the case with unenclosed pupæ, is angulated almost as conspicuously as the pupa of *Bedellia*. The next genus, *Hyponomeuta*, also furnishes one hawthorn-eating larva, that of *Padellus*. Of this the pupa, as is well known, is enclosed in a cocoon, and is rounded. The larva of *Phibalocera Quercana* is so polyphagous that I have no doubt it feeds readily on hawthorn. It is found in June, generally on the under side of the leaf, beneath a slight web. No *Depressaria* feeds on hawthorn. Of the *Gelechiæ*, *vulgella* feeds between united leaves in April; *leucatella* at the end of May and beginning of June; but up to the present time we are not aware of any other species of the genus that attacks the hawthorn, though it is not improbable that the apple-feeding *Rhombella* and pear-feeding *Nanella* may also pay their respects to the hawthorn.

When a hawthorn hedge is trimmed the hedger generally gives the branches a few snicks before he succeeds in cutting off the part he wishes to remove. These neatly-made clefts in the branches are *treasure-trove* to the female *Dasycera sulphurella*: she deposits her eggs in them; and the larvæ, when hatched, find themselves in a species of paradise; the walls of their chink in just that incipient stage of decay that the epicure likes for his venison. Man is not the only animal that likes the process of putrefaction commenced in his food before transferring it to his stomach, and so the larva of *D. sulphurella* feasts greedily on the rotting wood of the hawthorn. It is probable that several of the *Oecophora* larvæ are willing to partici-

pate in the dainty meal of *D. sulphurella*; but as yet we have not obtained any species from the twigs of the hawthorn.

In the genus *Argyresthia* we know of at least one species, *Nitidella*, which feeds in the shoots of hawthorn. The full-fed larvæ may frequently be noticed swinging to and fro as they descend by a thread to the ground in the month of May. Of the genus *Ornix* one species, *Anglicella*, feeds in the cones which it constructs on the leaves of the hawthorn.

The genus *Coleophora* is sufficiently represented among the hawthorn-feeders. As soon as the fresh leaves are expanded in April, *Nigricella* comes forth from the crannies where he had spent the winter, in spite of all the eager glances of the tom-tits desirous of descrying his whereabouts; and after breaking his long brumal fast it suddenly occurs to him that his old coat is shabby,—that now the summer fashions are coming in, and he ought to have a new one; so he sets to work with that determined will which urges all people who are in pursuit of finery, and eats out sufficient of a blotch near the base of the leaf to form a new coat, and, leaving his old curved one attached to the leaf behind him, he struts away in a spick and span new straight one, evidently thinking himself the “admired of all admirers.” The brown blotches on the leaves by the middle of May sufficiently betray the abundance of the species and the appetite of each individual.

In July the leaves are again noticed to be blotched; and to the scrutinizing eye the blotch will appear of rather a different colour to that caused by *C. nigricella*; moreover, the case, instead of being straight, is one of the drollest forms of garment which any caterpillar constructs. Conceive a small hawthorn leaf, of a brown colour and folded down the middle, and the caterpillar living in one half of it, for the other half is apparently a superfluous piece of luxury, all for show and not at all for use: this is the case of *C. siccifolia*. In August conspicuous cases of *C. paripennella*, which are placed almost flat against and September we find the less upon the leaf.

The larva of *Laverna atra* (the white variety) feeds in the haws, in September and October; it has, however, not yet been sufficiently investigated.

Of the genus *Lithocolletis* two species feed on the hawthorn, one mining the upper side of the leaf (*L. corylifoliella*), the other the under side. This last has always gone here by the name of *Pomifoliella*; but recently Professor Frey has endeavoured to distinguish it from the apple-feeding species, and has applied to it the name of *L.*

Oxyacanthæ. Whether this distinction is one which will be generally adopted, yet remains to be seen.

H. T. STAINTON.

Mountsfield, Lewisham,
July, 1856.

A List of the Birds of Banffshire, accompanied with Anecdotes.
By THOMAS EDWARD, Collector of and Dealer in Natural-History Specimens at Banff.

(Continued from page 5122).

The Sparrowhawk (*Falco nisus*). This is another daring individual. When standing on our links, not very long since, and speaking to one of our keepers, something struck me on the breast and fell to the ground. Instantly, and like a flash of lightning, down rushed a sparrowhawk, which, picking up a thrush from betwixt us, rose again with his booty, and winged his aerial course in safety, and was out of reach before either of us had time to attempt to arrest his progress, notwithstanding we had a gun each ready for action. Was not this a daring fellow? He well deserved to escape as he did, although the keeper grumbled a good deal at our seeming stupidity. On another occasion that came within my knowledge a sparrowhawk, whilst passing the mansion-house of Eden, near this place, dashed through a window at a canary bird hanging in a cage, and succeeded in killing the little favourite before assistance could reach the murderous scene, although several individuals, attracted by the falling fragments of glass and the screams of the poor sufferer, were almost instantly on the spot. It is almost needless to add that hawk paid the penalty.

The Kestrel (*Falco Tinnunculus*). This mouse-, insect- and caterpillar-eating bird, or hawk if you will, is one of the commonest of the tribe with us. It is miscalled the sparrowhawk here by most people, gamekeepers and all; the term kestrel being seldom, if ever, applied. I remember, when a boy, keeping, amongst a host of others, several of this species; I also recollect that when a mouse, a young rabbit, a leveret, or a middle-sized rat, and a bird were presented at the same time, either of the former were sure to be pounced upon, whilst the latter invariably lay unheeded. Since then, and during about thirty years of taxidermal practice, having in that time preserved a good

round number, all of which I likewise dissected, I have very seldom, very seldom indeed, found anything but the remains of the smaller quadrupeds, insects (chiefly beetles) and caterpillars in their stomachs ; yet this poor bird is persecuted here with as much vigour and pertinacity as any of the most destructive kinds. It may be that they all, at times, meddle with feathered flesh, even in the shape of some of the game species ; but I should say that that was very seldom, and even then under very peculiar circumstances. Prejudice, however, is a strange and stubborn thing, and not easily rooted out ; so that our keepers, whose ignorance teaches them no better, must and will have their own way. I do not mention these things as anything new, but merely to throw in my humble mite in favour of the bird, in the hope of being, with others, the happy and instrumental means of at least saving it in some measure, if not altogether, from the unwarranted persecution to which it is in general subject. A pair of kestrels built for several years in a dove-cot belonging to an acquaintance of mine, and seemed to live on the most friendly terms with the pigeons, never seeking to harm any of them, young or old. In the old castle of Boyne, too, a few miles from this place, a pair generally breed every season amongst jackdaws and pigeons ; and they, also, appear to live on the very best of terms with their neighbours.

The Goshawk (*Falco palumbarius*). If you were to ask our keepers and gunners generally about this bird, they would tell you that they meet with it pretty often ; but if you were to come to closer quarters with them, and demand a sight of these so-called goshawks, you would find that in nineteen cases out of twenty they would prove to be nothing more nor less than female sparrowhawks or some species of buzzard. The goshawk, however, that is the real goshawk, has been seen, and even obtained, within our boundaries ; but it is very rare. One was procured at or near Tomintoul, in 1836 ; another at Ellintore, a few years later ; and a third shot from the roof of a house in Macduff, in 1840 ; these being, so far as I am aware, all that have been obtained here.

The Kite (*Falco milvus*), said to be once plentiful here, is now but very seldom seen. Like the good old times, it may be said to have gone,—gone, and no one knows whither.

The Buzzard (*Falco buteo*). Occasionally met with.

The Roughlegged Buzzard (*Falco lagopus*). More frequent than the last. One in my own collection was killed on the hill of Durn, about fourteen years ago ; and one, now in the Banff Museum, was shot at Farglen, the seat of Sir Robert Abercromby, in 1854. The

nests of both this and the preceding species have been found here, but very rarely.

The Honey Buzzard (*Falco apivorus*). A still rarer species; but that they have been met with there is no doubt. A most splendid specimen was shot at Gamrie, a few years ago, by a Mr. James Docker, of that place. All these larger birds are generally termed "gleds" with us.

The Marsh Harrier (*Falco aeruginosus*). A specimen was killed at Farglen about sixteen years since.

The Hen Harrier (*Falco cyaneus*). Occasionally. Females and the young of the year most frequent. The male is known here by the names of gray, blue and lead hawk; the female by the name of ring-tail.

Ashcoloured Harrier (*Falco cinerascens*). I do not remember ever seeing more than one of this species, which was procured here. It was a first-rate specimen, a male and an old one, a very pretty bird.

The Longeared Owl, Horned Owl (*Strix otus*). Plentiful. I once found a nest of this bird with eggs in the month of March, I think about the middle.

The Shorteared Owl, Woodcock, or Grass Owl (*Strix brachyotus*). A migrating species with us. Specimens are annually met with by our sportsmen and keepers when out shooting rabbits, snipe and woodcocks.

The Barn Owl (*Strix flammea*). This, I am told, is a pretty common species in England. With us it is not so, but must rank as very rare. I know only of four being procured here within the last twenty-two years. One of them is in my own collection; and George Donaldson, Esq., of Glasgow, has another, which he shot on the estate of Durn, in this county, a short time since.

The Tawny or Brown Owl (*Strix aluco*). About in equal numbers with him of the long ears. I have known these birds to have had eggs by the middle of March.

The Snowy Owl (*Strix nyctea*). One of the most magnificent of all the owl tribe. What a splendid and showy bird! I think the term "glistening" or "spangled" might, with all truth and justice, be applied to this shining species. What a noble-looking bird! What beautiful eyes! the pupil dark, and the iris like two rings of the finest burnished gold, set, as it were, in a casket of polished silver. I am glad, nay, proud, of being able to give this king of British owls a place in my list, and of being able, perhaps for the first time,

to say that at least one pair have been known to breed within the district. A few miles west of Portsoy,* and not far from Cullen, stands the bold and tawny form of Loggie Head. In connexion with this rocky promontory, and about midway up its rugged height, there is a narrow cave or chasm, called "Dickie Hare." In this cave a pair of these owls bred in 1845. Unluckily, however, for them, a party of fishermen belonging to Cullen, returning one morning, in the summer of the year just mentioned, from their vocation rather earlier than usual, discovered their retreat, by observing one of the birds go in. This was too much to lose sight of, so up the dangerous and jagged precipice scrambled one of the crew, and managed to reach the aperture where the bird disappeared; but instead of only one, as he expected, he was not a little surprised to find that he had four to deal with, two old and two young ones, well fledged; and the apartment was so narrow that only one person could enter at a time, so that help was out of the question; and his ambition grasped the whole. What was he to do, or what could he do? Turn, and then the birds would have flown. Oh, no! but, just as I would have done had I been in his place, he set upon them all; and, after a prolonged and pretty severe battle, in which he got himself a good deal lacerated and his clothes torn by the claws of the birds, he succeeded in capturing them all alive, except one of the young ones, which fell a sacrifice to the struggle. The state of excitement which the little town was in as the man landed with his prizes, and the news of his morning's achievement spread, may in some measure be imagined, but it can hardly be described. They were sold, I believe, a few days afterwards, to a doctor; but what became of them afterwards I could never learn.

The Little Owl (*Strix passerina*). I give this bird a place here on the authority of a Mr. Wilson, late of this town, who says he saw one in a wood near this place.

T. EDWARD.

Banff, June, 1856.

* Not Portsay, as printed in the 'Zoologist' (Zool. 5118).

Zoology from the Seat of War.—I was yesterday on board H.M.S. 'Sidon,' which arrived at Portsmouth a few days ago from the Crimea. The captain introduced me to the surgeon of the ship, Mr. Courtenay, who kindly showed me the living contents of his cabin, which consisted of a magnificent eagle-owl, another owl rather smaller than *brachyotus*, and which I do not know, and a hobby which had flown on board and been captured in the sea of Azoff. The eagle-owl was obtained on shore, I think at Kustendji; it was very slightly wounded, and was captured before it recovered itself; it has been two years on board the ship, and is an immense favourite with Jack, who has tamed it to perfection: I never saw a more thoroughly gentle and domesticated creature; it allowed itself to be lifted by its wings to show its terrific talons, and seemed to like being stroked as much as a cat does; its magnificent eyes showed to great advantage in the gun-room where there was *not too much* light! The owner had a clever way of carrying it, which the bird seemed quite to understand: it was by taking hold of the outside toe of each talon and then lifting the bird, which did not contract its talon or attempt to support itself by grasping hold of the hand; this struck me as being not the least interesting trait in its education: it flew back through the door of the gun-room to its station with the usual easy flight of its genus. The duties of the commissariat, viz., of providing raw fresh meat for so large a bird were, especially when on detached duty in the sea of Azoff, attended with considerable difficulty: it was never put on "ship's allowance," and has cost its owner more than £10 for fresh meat. In cold weather gulls could generally be shot near the ship, but they never approached in warm weather, and then, if cruising, a live stock of poultry had to be laid in, which at all events could be converted to good use if the gulls turned up again. The poor hobby, though in good plumage, did not seem to appreciate so well as the owls the luxury of a cabin in which he could not be seen without a candle. Mr. Courtenay had pinned a few insects too about his cabin, amongst which I noticed *A. Atropos*, *Cynthia?* *Cardui*, *Arctia Hebe*, &c., and he had also some live trap-door spiders and their houses; I think he said from Corfu: these are very large, the door being I should think near an inch in diameter; they appeared to be exactly like some which I have from South Australia. I have omitted to say that four out of a number of nightingales obtained in the Crimea survived the voyage: this fact gave rise to a rather amusing mistake, for just as I was going on board the ship I was told by a person on shore most seriously and gravely, "Oh, Miss Nightingale is on board the 'Sidon,' she has come home in her, incognito; however I dare say you will see her." I had forgotten this "shave" until the mention of the birds reminded me of their not less notable synonym.—*William Henry Hawker; Horndean, Hants, July 22, 1856.*

Occurrence of the Rose-coloured Pastor and Woodchat Shrike in Hertfordshire.—The rose-coloured starling was shot in this parish on December the 20th, 1855, a very unusual time for its occurrence in England. Although it did not appear at all wounded, yet it may possibly have been injured in some way, so as to be incapable of performing a long flight. It had been seen two or three times, previously to its being shot, in some open fields, on fallow, and near flocks of other birds—starlings, &c. It is a male bird, and seems to have been changing its plumage, as the rose-colour on the back is mixed with dirty brown, and the black feathers on the head and neck are edged with light brown: this bird was preserved for me, and is now at Mr. Leadbeater's, in Brewer Street. The woodchat shrike was shot near this place early in the spring, but I could not ascertain the exact date. The person who shot it was out late

one evening when it was nearly dusk, and saw the bird on the hedge close to him: he drew back a little and fired at the place where he had seen it; but being so near and having a large gun, he shot off all the tail and otherwise injured it. He thought that he had spoiled the bird so much that it could not be stuffed, but thinking it uncommon, kept it by him just as it was for some time; when Mr. Norman, a bird-stuffer, at Royston, saw it, and knowing its value took it home with him to try to set it up, although it was then getting decayed, in addition to being so badly shot. A female merlin also was shot here during the winter: this bird is a pretty constant winter visitor with us, and in the severe winter before last I obtained a very fine adult male bird.—*Edward J. Tuck; Wallington, near Baldock, Hertfordshire, July 21, 1856.*

Anecdote of Swallows.—The following facts are given as related to me by my son:—Towards the latter end of May a pair of house-sparrows having at Hampton Wick imprudently taken possession of a martin's nest of the previous year were attacked by the former owners, which endeavoured at first to drive out the intruders, but failing in doing so, in consequence of the determined and obstinate resistance met with, they proceeded to build up the entrance, which they speedily accomplished, for on the nest being inspected two days later no aperture was to be seen, and a sparrow was heard chirping from within; but on the following morning both nest and sparrow had totally disappeared, the imprisoned bird having apparently in its struggles to escape brought the whole fabric to the ground, leaving the martins in quiet occupation of the much-coveted site whereon to re-erect their frail mansion, which was immediately rebuilt, and in due course they succeeded in hatching and rearing their brood.—*R. W. Hadfield; High Cliff, Ventnor, Isle of Wight, July 1, 1856.*

Tubercular Excrescences of the Hedgesparrow.—Although the excrescences about the bill and eyelids of this bird have been frequently noticed, I am not aware that any author has described them as extending to the whole of the toes of both feet, but such was the state of one brought to me; its toes were literally almost covered with them, some of the size of a pea or larger, and being pendulous gave to the feet an unsightly and deformed appearance. I have yet to learn whether these excrescences are common to the hedgesparrow throughout the country. Although birds are not, that I know of, similarly afflicted in the east, men are. At Cochin legs of a prodigious size are not uncommonly seen, resembling those of the elephant, from which they derive their appropriate name.—*Id.*

Attack on a Cat by Hedgesparrows.—Although it is a well-known fact that most birds will, in defence of their young, expose themselves to great danger, it appears almost marvellous that so small and gentle a bird as the common hedgesparrow should be so totally regardless of it, as the following extract from my note-book would seem to prove:—May 17, 1852, at 8 o'clock, A. M., the attention of my son was attracted by an unusual fluttering and screeching noise under his window, on looking out of which he observed, to his great surprise, two hedgesparrows in the act of attacking a cat, flying at and dashing past and about it in all directions; this being repeated several times so bewildered and disconcerted Grimalkin, that apparently finding discretion the better part of valour, beat a hasty retreat, leaving its brave little opponents masters of the field. The young birds being unable to fly, (having only quitted their nest on the previous day), were compelled to take refuge beneath a thick privet.—*Id.*

Egg Prodigies.—During my residence at Peterhead, N. B., between the years 1850 and 1853, a goose laid a similar "prodigy" to that mentioned in the 'Zoologist' (Zool. 5123): it was exhibited for a long time in a butcher's shop there: I carefully

examined it before the opening was made large enough in the *outer shell* to remove the *inner egg*: unfortunately I cannot just now turn up my notes: a full account of it was published at the time in one of the Aberdeen papers. The following was published in the 'John O'Groat Journal' of the 20th ult.:—“*Curious Circumstance*.—Some weeks ago there was found in the nest of a ‘heady craw,’ on the island in the loch of Stemster in this county, an egg more than double the size of the ordinary egg of that bird, but in all other points of resemblance—in shape, tint and spots—exactly the same. For some time it was allowed to remain in the nest, in the expectation that the bird might be generous enough to continue the practice of laying eggs of the same dimensions, but on no more being found it was ultimately carried away and boiled, when, to the surprise of the individual who applied his spoon to the shell, it was found to contain not only a fair amount of edible matter in the form of yolk and white, but likewise a fully formed egg of the ordinary dimensions, with a shell of the usual thickness and colour. There were, in fact, two single eggs rolled into one, but by what agency or process it is impossible to say.” The editor has most kindly given me the rarity; unfortunately it was much crushed in its transit to the news office: to preserve it from further injury I have put it into spirits. It was fortunate the finder had an egg-eating propensity; and thus boiling it has fixed the inner egg in the hardened white. The outer egg has a nice yolk, which peers out from the fracture made on the side for the spoon, and thus the inner egg is nicely exposed. The outer egg is as stated unusually large, light coloured, and of good shape; the inner one much darker, and obtuse at both ends. It must be understood that the bird called “Heady Craw” in Caithness, is not the *Corvus cornix*, “Hoodie Craw” of Aberdeen, or “Scaul Craw” of other parts of Scotland, but the black-headed gull, “*Larus ridibundus*” of Yarrel.

—Charles William Peach; *Wick, N. B.*, July 8, 1856.

Description of a supposed new Skenea: occurrence of Crenella costulata and Modiola phaseolina in Mounts Bay.—Through the kindness of Spence Bate, Esq., I am enabled to send you an account of an extremely minute *Skenea* which I found in sand, taken amongst *Corallina officinalis* from rock pools at Gwyllyn Vase, near Falmouth. It is involute like *Skenea nitidissima*, and equally umbilicated both above and below; but the whorls, which are three instead of two and a half as in that shell, do not increase quite so rapidly in size: its distinctive feature consists in having three spiral ribs or carinæ of a shining fulvous tint which contrast strongly with the whitish ground-colour of the shell; one is situated on either side, extending from the apex to the orifice, and the third, which is not so distinctly elevated, on the centre of the body. The entire volutions appear under a good lens distinctly wrinkled longitudinally, more especially on the inner side, and under a still higher power finely striated spirally: the mouth, which is well rounded and does not turn to either side, embraces a considerable portion of the body whorl: the operculum I have not been able to examine: the diameter hardly equals the twentieth of an inch. As yet I have only obtained four specimens, but have still some small portion of the sand in which they are found remaining unexamined. If the shell as described above is already known, I should feel greatly obliged if any of your scientific correspondents would favour me with the name. I am borne out in my opinion that it is new to the British Fauna by Dr.

Battersby, of Torquay, who has kindly examined the shell: should it prove equally new to science, *Skenea tricarinata* would be a very appropriate designation. It may be interesting to some of your readers to know that I met with several fine specimens of the rare *Crenella costulata* in rock pools in Mounts Bay, and also *Modiola phaseolina* in some abundance in the same locality.—*W. Webster; Upton Hall, near Birkenhead, July 21, 1856.*

“*Do the Males of certain of our Lepidopterous Insects,*” &c., &c. (see Zool. 5149).—Under the above title Mr. Stone gives the entomological world something new, but, unfortunately, far from being a fact. In the first place, I deny the assertion that any Lepidopterous chrysalis, female, attracts the perfect male: it is contrary to common sense. Would the male wait till the female expanded her wings? Certainly not: females call the males before they come. As regards prodromaria, I have taken a great number of specimens during the last few years, and reared as many others from the ovæ. That Mr. Stone found a worn male at the foot of an oak is ever so likely, and that he found a female there afterwards was merely a case of good luck; and no doubt, had he visited the same tree the following afternoons, he might have taken both males and females newly emerged from the chrysalis. I have done this for several days in succession; and why? If we find a prodromaria fresh from the chrysalis, a brood must be about. I have often taken four or more specimens stretching on a tree. A female prodromaria, like other species, does not call the males unless she is inclined; and, moreover, the males are not always inclined to come at her desire. I have taken several females into the woods at dusk. They have called and waited till 2 A.M. before any males made their appearance, and sometimes none at that time. This season many males came soon after dusk on a moonlight night. Like sugaring, it is an uncertain game. The best plan is to take the males into the wood, pin them on a tree away from the outside, or the bats will certainly make a meal of them; visit them the next morning, and you will find most of them *in coitu*. Female prodromaria, like other species, may not be inclined to call the males. The day they emerge from the chrysalis this is not at all uncommon. Mr. Stone is so eloquent in describing the loves of insects and animals, that I am sorry he was not present with me, a few days ago, in a field where *M. Artemis* abounds. He would there have seen a male and female *in coitu*, and three or four males clustered upon them. Why they were so foolish, perhaps Mr. Stone could have explained with more delight to the readers of the ‘*Zoologist*’ than I can. I think it was a case of exhaustion; for I observed several females, like Mr. Stone’s hedgehog, dodging the males. The female evidently had not met with the one that suited her fancy; and some skill was required to evade the attentions of three or four males at the same time.—*R. S. Edleston; July 8, 1856.*

Early appearance of Vanessa Atalanta.—During the first week of the present month I was surprised to see flying in the path on the west side of Nunhead Cemetery several specimens of *Vanessa Atalanta*; I saw three caught, so I have no doubt of the species: I have never seen or heard of *Vanessa Atalanta* being out so early, and therefore I think, perhaps, the fact may be worth noting.—*T. Wildman; Grove Place, Camberwell, July 23, 1856.*

[It is uncommon for the new brood to appear so soon, and a specimen which

I have examined, taken at the same date, had evidently been some weeks on the wing. Can Mr. Wildman give any information as to the state of his specimens?—*E. N.*]

Aporia Cratægi in Kent.—I had the pleasure of seeing this insect on the wing for the first time on the 12th inst., and took ten specimens in good condition.—*H. A. Stowell; Faversham, July 21, 1856.*—[*Intelligencer.*]

Aporia Cratægi.—Whilst riding out to-day I caught a very fine specimen of *A. Cratægi* in one of the Minster Lanes. I caught two others about three weeks ago in Herne Park.—*R. F. Turnbull; 4, Chatham Place, Ramsgate July 21, 1856.*—[*Id.*]

Colias Hyale.—A very fine specimen of *Colias Hyale* was taken at Lavant, in Sussex, on the 25th of June, after a hard chase, by a friend of mine, who has just given it to me. *Polyommatus Argus* is now abundant in this locality.—*Wm. Buckler; Lumley Cottage, Emsworth, Hants, July 15, 1856.*—[*Id.*]

Capture of Trochilium Chrysidiiforme.—On the 13th instant I captured two fine specimens of this pretty and rare species between Folkstone and Dover. A few days afterwards I paid the locality a visit, and took one more. I was unsuccessful on my first visit, on the 1st of the month; and on my last, a few days since, it rained.—*Samuel Stevens; Bloomsbury Street, London, July 25, 1856.*

Trochilium Cynipiforme.—I have been on the search for this truly beautiful little clear-wing for the last fortnight. On the 13th I saw several of the pupæ-skins projecting from the bark of oaks, between the magazine and the barracks in Hyde Park, but saw none of the imago. A young man who collects for profit very freely showed me one out of four that he had taken. I went to-day and had the good fortune to capture five males and two females; three or four others were collecting and took four or five each: one young gentleman told me he had taken thirteen on Monday, so that the insect may be considered plentiful this year, notwithstanding the avidity with which it has been hunted for years past. No wonder that some insects become rarer, or get exterminated, when ruthless collectors take whole broods of larvæ, pupæ by the gross, and the perfect insect by hundreds! I always read with regret of wholesale captures of insects any way approaching to the rare. One of my *Trochilium Cynipiforme* was on the wing and settled about two feet from the bottom of an oak, and by the movement of the abdomen and running over the bark appeared to be depositing her eggs. I watched her for some time and then captured her, after which I took her to Kensington Gardens and liberated her on an oak tree. To-morrow I shall go to the Park, and if again successful in taking *Cynipiformes* shall liberate most of them in Kensington Gardens, and see if I can extend the breed of this somewhat scarce insect in a new locality. The best time for collecting this insect is from 10 to 12 o'clock in the day.—*T. R. Oxley; Bayswater, July 15, 1856.*—[*Intelligencer.*]

Strange Habit of Lasiocampa Trifolii.—Contrary to your theory, this larva *does* burrow: I saw one to-day nearly under the soil, and some time after I looked and it was quite gone. On examining the soil I found several cocoons, some with, others without, a loose cocoon of earth outside the cocoon proper.—*S. Bingham; Bank, Newnham; July 15, 1856.*—[*Id.*]

Occurrence of Drepana Sicula near Bristol.—You will be interested to learn that after the lapse of twenty-one years this insect has occurred in Leigh Woods: it was taken last week by my friend Mr. H. Bolt. We have looked after more pretty keenly; but up to the present time none have been found.—*George Harding, jun.; Stapleton, near Bristol, June 27, 1856.*—[*Id.*]

Capture of a second Specimen of Platypteryx Sicula near Bristol in 1856.—On the 5th of July I was fortunate enough to capture a male specimen of *Platypteryx sicula* on the wing in Leigh Woods, being the third known British specimen.—*Philip H. Vaughan; July, 1856.*

Botys Terrealis (Lep.)—I have succeeded in breeding several of this insect from larvae collected, last September, in N. Wales. The larva feeds on *Solidago*. It is slender, pale green, and feeds in a loose web on the under side of the leaves. When full-fed it forms a strong web-like cocoon, in which it remains during winter, changing to pupa in spring, and emerging in the imago state about the middle of June.—*G. A. Almond; Birkenhead, July 19, 1856.*—[*Intelligencer.*]

Omission in Mr. Doubleday's List of Eupitheciæ.—In copying the list of *Eupitheciæ* for the 'Zoologist' one species was accidentally omitted, *viz.*, *E. Centaureata*. It will come in between *E. expallidata* and *E. succenturiata*, as below:—

27 bis. *Centaureata*, *W. V., Haw. Wood*, 679.

—*Henry Doubleday; Epping, June 6, 1856.*

Occurrence of Limacodes Asellus near Brockenhurst.—On Saturday last I received a fine unset male of this rare Lepidopterous insect; it was taken the previous day by Mr. Charles Turner, near Brockenhurst, New Forest, Hants: my friend, Mr. Samuel Stevens, likewise received a fine pair (male and female) from the same party.—*A. F. Sheppard; Rutland House, Kingston-on-Thames, July 7, 1856.*

Occurrence of Graphiphora Ditrapezium in Dorsetshire.—In July, 1853, two fine specimens of this beautiful and rare insect were taken here by myself; also one specimen in July, 1855: it has again been taken here this season by myself and Mr. F. Bond.—*O. P.-Cambridge; Bloxworth, near Polandford, Dorset.*

Late appearance of Cucullia Chamomillæ.—One of my children captured yesterday a fine female of this species, which evidently, from the freshness of its appearance, had but recently emerged from the pupa: this appears remarkable, as I found full-fed larvæ on the 29th of June, which descended on the following day; others had been taken prior to that period and some are still feeding, Mr. Reading, of Plymouth, having taken some yesterday.—*W. H. Hayward; Devonport, Devon, July 18, 1856.*

Captures of Lepidoptera at Pembury, Kent.—I have taken the following species during the last week in June and the first in July, *viz.*, *Crambus uliginosellus*, *Botys lancealis* and *Pionea stramentalis*, flying together on a boggy side of a hill known as the Miller's Wood; the two latter occurred more commonly in the lowest ground, and the first in an open space where the asphodel and sundew grew in great profusion amongst the sedges and rushes; the females, when on the wing, looked whiter than *Pascuellus*, their under wings being much purer in colour; the males appeared darker, and the broad silvery basal streak was nearly divided into two by a suffused brown line. *Macaria notata* was not rare, but one out of every three taken had an under wing entirely absent, and one specimen flew tolerably well with both the under wings abortive. *Apatela leporina* occurred on birch stems. *Eupœcilia ambiguana* flying about birch bushes in the evening. *Ceropacha fluctuosa* was beaten from birches during the day. *Epione adversaria* was scarce and much worn. *Zerene albicillaria* occurred sparingly on the wing in the evening. *Bucculatrix frangulella* was common on the *Rhamnus frangula*.—*J. Jenner Weir; 20, Maismore Square, Old Kent Road, Festival of St. James the Great, 1856.*

Captures of Lepidoptera at Brighton.—*Neuria Saponaria* has been rather abundant here during the last week or two: I never before met with it as a common insect. Nearly all that I have taken of this species at sugar have been *females*, and those which I have taken at light have been *males*. Can you account for this fact? I have taken a single specimen of *Agrotis cinerea*, at sugar, on June 25th.—*John N. Winter*; 28, *Montpellier Road, July 6, 1856.*—[*Intelligencer.*]

Captures of Lepidoptera in 1856.—The following are the choicest of my captures during the present summer:—

Biston prodromaria. Several specimens.

Aleucis pictaria. Mothed on Dartford Heath, April 12th.

Ennomos illustraria. Two specimens, one of them flying round a lamp near the Erith Station, April 26th.

Notodonta carmelita. Several at West Wickham, from May 4th to 15th, on trunks of birch-trees.

„ *dictæoides.* Two, May 4th and 9th, on trunks of birch-trees.

„ *Chaonia.* A single specimen, taken May 11th, on the trunk of an oak.

„ *trepida.* A single specimen, taken May 15th, on the trunk of a birch.

Ceropacha ridens. Several, May 11th.

Ptilodontis palpina. A single specimen, May 20th.

I have bred the undermentioned species from the larvæ:—

Ennomos illustraria. Several.

„ *lunaria.* Several.

Notodonta dictæoides. Several.

„ *dodonæa.* Several.

Stauropus Fagi.

Orgyia gonostigma. Several.

Cucullia Asteris. Several.

Cabera rotundaria. Several.

Notodonta dodonæa, a beautiful variety, from pupæ raked.

„ *dictæa.* Several, from pupæ raked.

Ptilodontis palpina.

Tæniocampa munda, and others too numerous to mention.—*F. O. Standish*; 2, *Alfred Cottages, Warner Road, Camberwell, July, 1856.*

Cabera rotundaria.—I have bred several of this insect, which is undoubtedly a distinct species. It is a smaller insect than *C. pusaria*; the wings are rounder and fuller, and the two lines near the base of the wing nearly meet. I possess specimens that vary in the closeness of the lines, but still they are readily distinguished from the common white wave: I have had a pair *in copulâ*, and trust to have the larva booked.—*Id.*

Notodonta dictæoides, *N. dromedarius*, and *N. camelina*.—I am breeding now all three of the species named, from larvæ I took last autumn, although I bred some in April last: surely they have made their appearance too late (July 22nd) to allow of an autumnal brood.—*Id.*

Retinia sylvestrana.—I have bred several of this species from larvæ, taken in the young shoots of the stone pine (*Pinus pinea*).—*Id.*

Capture of two new British Tineæ at Box Hill.—I have taken several fine specimens of *Laverna conturbatella* and *Raschkiella* off the *Epilobium angustifolium*

growing on Box Hill, from the 22nd of June to the 20th of July, which shows that they must last a long time, particularly conturbatella, which were fine the last time I took them. Of conturbatella, I have bred four specimens from larvæ which I found spun up in the tops of the flowering spikes of the Epilobium; it is a black and nimble larva. The last time I visited the locality (July 20th) I took several larvæ mining in the leaves of the same plant: as this is a new discovery, the miner may possibly turn out another new species.—*Id.*

Capture of Coleophora conspicuella in Headley Lane.—On the 20th of July I took a remarkably fine specimen of *Coleophora conspicuella* in Headley Lane: this is the third instance of this rare and beautiful insect having occurred in Britain; the first having been taken by Mr. Bedell, the second by Mr. Stainton and both in the same locality as my own.—*Id.*

On the Habits of Argyresthia glaucinella.—The larvæ of this species feed under the bark of oak and Spanish chestnut; they are excessively local, and only found at the base of trees of enormous size; to wit, out of one thousand oaks, &c., in Dunham Park, I have found them only on one Spanish chestnut and three oaks. The imago pops out from 9 A.M. to 9 P.M., a continual appearance: they rarely rest with the head as a support like most of the species, but place themselves full-stretch on their legs as if ready to bolt; it is all *sham*; nothing is easier than to pop them into a pill-box. I have seen none on the wing; all were at rest. I do not doubt that they have been overlooked, from the strange place of their abode requiring a person to prostrate himself to be successful in their capture; they are now out.—*R. S. Edleston; 5, Meal Street, Manchester, June 28, 1856.*—[*Intelligencer.*]

Attractiveness of Glyceria fluitans to Moths.—That this grass, when in bloom, was very palatable to *Noctuæ* was known to me long ago: and the same fact was also discovered by Messrs. Bedell and Douglas in 1845; but I had certainly no conception till the other evening of the extent to which the flowers of the *Glyceria* are *sticky*. If you draw your hand several times across a batch of this grass at this season of the year you will find that your fingers are about as sticky as if you had dipped them in a solution of sugar. I do not know that the *Glyceria* proves attractive to rarities, though many of the commoner species will swarm at it; but it may be serviceable to some incipients to know that the swampy edges of ditches and ponds will furnish them with plants *ready sugared*.—*H. T. Stainton; July 14, 1856.*—[*Id.*]

What the Lancashire Entomologists have to "brag" about.—The following list is hastily made out as an answer to Mr. Stainton's reiterated remarks, that the English entomologists never look for new species until some one has found them. I had thought that the fact of their being found was proof they were looked for; however, as we do look for both new and old things down here, and, as I think, his remarks are not correct, and, therefore, ought not to go on the Continent uncontradicted, I send you the following list of what has been done by Lancashire collectors. Since the first number of the 'Entomologist' was published, it may be said that some of the species named have also been found by the Southern collectors. Granted, and this is greater proof, if any more were wanted, that the English entomologists do look for new species. On reference to the 'Entomologist' and to the list of captures in the early volumes of the 'Zoologist,' it will be seen at once what were considered wonderful captures in those days, and it will also be seen that the things I have named were rarely, if ever mentioned, as having been taken; in fact, many of them are quite new

to Britain since then, and some of them new to science, I have confined myself to the work done by the Lancashire collectors, if I had taken the Yorkshire entomologists in (rather a difficult job that), I might have added such things as *Opigena Fennica*, n. s., *Gastropacha Illicifolia* (reputed British), and *Agrophila Sulphurea*; the last found by Mr. Dunning, &c. I have purposely omitted my own captures, except where friends have also taken the species.

In Butterflies:—*Pieris Daplidice*. Disputed as British; taken by Mr. Buxton.

Melitaea Athalia. Found from a hint given by a dealer, over his cups.

Sphingidæ, *Bombycidæ* and *Noctuidæ*:—A new species of burnet, which I have never seen figured or in any continental collection, and is not yet named.

Chærocampa Celerio. Frequently taken.

Deilephila lineata. Frequently taken.

„ *Galii*. Taken several times.

Trochilium Sphegiformis. Taken near Chat-Moss.

„ *Scoliæformis*, n. s. Taken freely by Mr. Ashworth, in Wales.

Lithosia complanula. Made plentiful by Mr. Greening.

„ *muscerda*. Lost for many years, turned up by Mr. Buxton, in abundance.

Lasiocampa Trifolii. Made common.

Endromis versicolor. Taken.

Semaphora bicuspis, n. s. Bred and captured by J. B. Hodgkinson and Mr. Cooper.

Petasia nubeculosa, n. s. Taken by Mr. Cooper and Mr. Almond.

Notodontæ Carmelita and *N. dictæoides*. When it was disputed as a species.

„ *trepida*. In plenty, when it was almost unique.

„ *Chaonia*. At the same time, when there was not a specimen in the county.—*B. Cooke*.

Acronycta Alni.—*Carter & Edleston*.

„ *Myricæ*, n. s.—*J. B. Hodgkinson*.

„ *Salicis* and *A. Arion*. Taken freely by T. Harris.

Ceropacha fluctuosa and *C. hybridata*. Made plentiful.

Mythimna Turca and *Cymatophora Oo*. When they were not to be had for love or money.

Leucania littoralis. Found in hundreds when there was not a specimen in our cabinets.

Nonagria lutosa. When it was disputed as British.

Crymodes Templi. A species which J. F. Stephens never had found freely.

Gortyna Petasis, n. s. Found and afterwards bred.

Miana fasciuncula. Disputed as a species on the Continent, even by M. Guenèe in his great work; taken in profusion, and its standing established.

Luperina Cespitis. Taken and its habits discovered.

„ *connexa* and *L. abjecta*. Taken.

„ *albicolon*. Taken freely, when no one would admit it was distinct, until they saw it in Raddon's collection.

Triphæna fimbria. In hundreds, when it was doubted as British.

Cerigo Cytherea. When it was worth a guinea.

Noctua leucographa. Found.

„ *Dahlii* and *N. depuncta*. Turned up.

Noctua Hebraica. Turned up, when worth a Jew's eye.

Chersotis Haworthii and *C. agathina*. When there was not a specimen of either in any cabinet in the county.

Spaelotis Pyrophila and *S. præcox*. When one was unknown to us, and a wing of the other was preserved in one of the best Southern cabinets.

„ *cataleuca* and *Agrotis saucia*. Now in every Lancashire cabinet, were almost, if not quite, unknown in the London cabinets, when they were turned up in the North.

Agrotis obelisca, *A. Ripæ*, and some other species of *Agrotis* were found here long before they were taken in the South.

„ *Ashworthii*, n. s. New to science.

Tæniocampa opima and *T. Populeti*. New to science.

Orthosia neglecta and *O. suspecta*. Both made common.

Tethea subtusa. Bred freely, still scarce in the South.

Euperia Fulvago and *Cirredia Xerampelina*. Taken freely.

Xanthia Gilvago. Got in plenty.

Epunda Lichenea (of doctoring notoriety). Made common.

Noctua sobrina, n. s. Taken by Cooper.

Hadena lutulenta and *H. Æthiops*. Taken by J. B. Hodgkinson, who also, when in Scotland, first observed *H. assimilis*, in the hands of a collector.

„ *suasa*. Found, and made common; first sold at 30s. each.

„ *rectilinea*. Taken; sold for a fabulous price; now plentiful.

Aplecta advena. Got in plenty.

„ *ocellata*. Frequently taken before Scotland was visited.

„ *herbida*. Made common, when a wing was esteemed a great prize.

Calocampa vetusta and *C. exoleta*. When both were supposed to have been imported.

Cucullia Chamomillæ. Taken freely, when it was a puzzle to the greatest English entomologist to separate it from the common species.

Cloantha Solidaginis, n. s. Got in hundreds.

Heliothis armigera. Found.

„ *scutosa*. Taken by J. B. Hodgkinson and J. Cooper.

Anarta melanopa. Got in plenty.

„ *cordigera*. In abundance.

Plusia Interrogationis. Found by J. Tinker, &c.

„ *Bractea*. Discovered in plenty by S. Carter, when it had become disputed as British.

Abrostola Urticæ. Taken freely.

Toxocampa pastinum. Hitherto only in one cabinet in this county, taken.

Catocala Fraxini. Got several times, disputed as British, until A. Lomax took one alive to R. S. Edleston.

Amongst the Pyralidæ, it is only necessary to name the following new species added to our list and made common by Lancashire collectors to close my argument about this family: — *Rhodaria sanguinalis*, *Scopula alpinalis*, *S. decrepitalis*, *Botys terrealis*, and *Shrankia turfosalis*.

In Geometridæ less has been done, still quite as much, if not more, than the Londoners have accomplished, viz., new or scarce species:—

<i>Eupisteria carbonaria</i>	<i>Epione parallelaria</i>	<i>Cheimatobia filigrammaria</i>
" <i>quinquaria</i>	<i>Coremia munitaria</i>	" <i>borearia</i>
<i>Nyssia zonaria</i>	<i>Thera variaria</i>	<i>Phibalapteryx lapidaria</i>
<i>Charissa obfuscaria</i>	<i>Phaesyle flavicinctaria</i>	" <i>gemmaria</i>
<i>Gnophos</i> —, n. s.	<i>Cheimatobia autumnaria</i>	One or two new pugs, and
<i>Psodos trepidaria</i> ; nearly all these have been made abundant: and the following species have been found and taken freely, though many of them were formerly considered exclusively Southern species:—		
<i>Chlorochroma viridaria</i>	<i>Coremia erutaria</i>	<i>Emmelesia bifasciaria</i>
<i>Eurymene dolabaria</i>	" <i>salicaria</i>	<i>Eupithecia Linaria</i>
<i>Ennomos lunaria</i>	<i>Harpalyce picaria</i>	" <i>pulchellaria</i>
" <i>erosaria</i>	" <i>popularia</i>	" <i>indigaria</i>
" <i>fuscantaria</i>	<i>Lobophora lobularia</i>	" <i>innotaria</i>
" <i>tiliaria</i>	" <i>hexapteraria</i>	" <i>Satyraria</i>
<i>Macaria notataria</i>	" <i>sexalisaria</i>	" <i>Succenturiaria?</i>
<i>Biston prodromaria</i>	<i>Acasis viretaria</i>	and its varieties
<i>Boarmia roboraria</i>	<i>Melanippe amnicularia</i>	<i>Acidalia marginepunctaria</i>
" <i>cinctaria</i>	<i>Emmelesia ericetaria</i>	" <i>Blomeraria</i>
<i>Cleora glabra</i>	" <i>tæniaria</i>	&c., &c.

In Tortricidæ, several new or rare species have been added to the list and "annexed" to our collections, including—

<i>Peronea permutana</i> , n. s.	<i>Spilonota amænana</i> , n. s.	<i>Retinia pinicolana</i>
" <i>Caledoniana</i> , n. s.	<i>Sericoris herbana</i>	<i>Stigmonota lunulana</i> , n. s.
" <i>lipsiana</i> , n. s.	<i>Coccyx geminana</i> , n. s.	" <i>Coniferana</i> , n. s.
" <i>Maccana</i> , n. s.	" <i>cosmophorana</i> , n. s.	
And many species supposed to be very rare, by hundreds, such as		
<i>Amphysa Gerningiana</i> (proved double-brooded).	<i>Sericoris Daleana</i>	<i>Sciaphila bellana</i>
" <i>prodromana</i>	<i>Mixodia palustrana</i>	<i>Phoxopteryx ramana</i>
<i>Peronea mixtana</i> (the true <i>Schalleriana</i>)	<i>Euchromia flammeana</i>	<i>Pædisca occultana</i> , n. s.
<i>Penthina ochromelana</i>	" <i>Arbutana</i>	" <i>stabilana</i> , n. s.
" <i>sauciana</i>	<i>Cnephasia lepidana</i> (double- brooded)	<i>Ephippiphora turbidana</i> , n. s.
<i>Heusimene fimbriana</i> ; all made common. I could extend this list, but will conclude this family with <i>Argyrolepis Cnicana</i> and <i>A. Schreibersiana</i> , which last was got by Mr. Buxton.	<i>Bactra furfurana</i>	" <i>signata</i>
Coccyx ustomaculana and		

Amongst the Crambidæ:—*Chilo Mucronellus*. Taken.

Crambus Selasellus. In profusion.

 " *latistrius*. Made plentiful.

 " *uliginosellus*. Found by a Lancashire collector in the South.

Heliothis dipsacea and *Crambus Warringtonellus*. Taken in profusion on our

Mosses. I might lengthen this list, but will conclude it with Mr. Buxton's new *Chilo* of last year: see 'Annual' for 1856.

I might say a little about the Phycidæ, but as that might bring my own name in, I forbear; the same remarks apply to the Tineidæ, but if our friends doubt the length of the list I could produce of what the Lancashire entomologists have done in this family, let them say so, and I will produce a list so long that they will never again say we do not look for species down here before they have been found elsewhere, and will be bound to grant that we have some right to "brag," in return for which, we will admit we are "precious like Yankees," that is "go-ahead chaps," but must submit that in our "brag" there is very little I. O. W. In conclusion, I respectfully call the attention of the readers of the 'Zoologist' and the 'Intelligencer' to the following old saw,—

"Where there is smoke there is fire."

—C. S. Gregson; *Edge Lane, Stanley, near Liverpool, July 19, 1856.*

Singular effect of Fascination on a Fly.—On my arrival at Nágpur, in Central India, in 1847, I requested that the first scorpion discovered in the house might be allowed to live for a few minutes, that I might have an opportunity of observing its form and movements. In that part of India, one has rarely to wait long for such a visitant, and on an early evening my colleague, the Rev. Mr. Hislop, announced that there was a scorpion on the wall. A lamp was set down on the floor, and we took convenient stations for noting what might pass. Just then a large fly, of the genus *Musca*, made its appearance, and soon became aware of the presence of the scorpion. A strange fury seemed to seize it, irresistably impelling it to an insane attack on the terrible occupant of the wall: it flew at it with all the little force it could muster, the scorpion meanwhile stretching out its lobster-like claw to catch it as it came. At the first charge, the fly rebounded from the crustaceous integument of its adversary, having done no more damage than if a child were to apply its hand to the well-mailed body of a cuirassier. It seemed amazed at its own audacity; and, in a state of great apparent agitation wheeled round, and taking precipitately to flight, soon put two or three yards of safe space between itself and its formidable but wingless foe. We now forcibly hoped "the better part of valour" might be allowed to prevail. But no! the tiny creature stood—it ventured to look—there glared still in view of the malignant form—what could the poor animal do but make a second brilliant onset, in which it again eluded the out-stretched claw of its enemy, and, as before, was successful in effecting a retreat? "Surely," we mused, "no further knight-errantry will be attempted—the most exacting would consider this enough." But we were mistaken. Again and again did the fly return to the combat, till in an unguarded moment it flew exactly into the open claw, which closing, rendered escape impossible. The generosity of a Mouravieff was scarcely to be looked for in the scorpion, which, as will be readily believed, lost no time in devouring its gallant captive. Possibly the fly may have been partly dazzled by the glare of the lamp. But undoubtedly it was in the main fascination, induced by the sight of the dread figure on the wall, that impelled it to begin the unequal contest, which could terminate only in the loss of its life.—*Robert Hunter; Edinburgh, June, 1856.*

Capture of Hydroporus melanarius in Cumberland.—Two days dredging in the mossy holes of a moor, near Lancastor, have produced me a pair of the very rare *Hydroporus melanarius*, *Sturm.*—*Thomas John Bold; Long Benton, Newcastle-on-Tyne, July 21, 1856.*

Note on the Nests of Hydrophilus caraboides and Hydröus piceus.—Perhaps the following notice, respecting the construction of the singular cocoon, or rather nest, of two of our aquatic beetles, may not be unacceptable to the readers of the 'Zoologist,' as I believe that no description of the process has hitherto been given. My observations were made upon insects living in a tank of glass, in my chambers in the Temple, during the month of May last. I had then a pair of *Hydrophilus caraboides*, whose proceedings I was enabled to watch. The leaves of the lesser spear-wort (*Ranunculus Flammula*), a plant of which was growing in the tank, were employed by the beetles in the formation of their nest. I found that they cut the leaves in a transverse direction near the stem, under water; that the detached portion was bent, by the joint efforts of the insects, till the point of the leaf approached the cut part, which caused it to assume the form of the tilt or arched head of a waggon. During this operation, and indeed until the whole was completed, the male was on the female's back, firmly clasping the edges of her elytra with his last pair of legs, and bending his head and thorax over hers. The hinder legs of the female were engaged in keeping together the extremities of the severed portion of the leaf whilst she closed up the openings with a light-coloured species of silk. This was a most curious and interesting process. The insect protruded from the extremity of her abdomen a forked organ, closely resembling two wasp stings, which moved with great rapidity, working a glutinous secretion between its points, much as a confectioner spins melted sugar. This gluten appeared to harden instantly, forming a close and tenacious web. As soon as the little ark was completed, a singular appendage was added to the upper part of the truncated end or stern, in the shape of what I shall call a flagstaff. This was slightly spatulate at its extremity, but soon curved longitudinally under the sun's heat. The concave side was always turned from the stern. The flagstaff itself was entirely composed of the above-mentioned gluten, and was about half an inch high. I was unable to observe the actual deposition of the eggs; but the larvæ were excluded in about a week. I should add, however, that this was under a high temperature, not unfrequently upwards of 90 degrees; the tank being enclosed with glass. This pair of beetles constructed no less than three of these nests, all floating freely on the surface of the water. I afterwards placed a pair of *Hydröus piceus* in the same tank. These also formed a nest, and one only. Of course I could not tell how many they might have made before they came into my possession. The plant selected by these insects was a *Ranunculus* with divided leaves, like a buttercup, which floated. The nest was in the shape of a shallow bag, fixed to the under side of the leaf, which was not bent, and allowed to remain, still growing, to the plant. It was also furnished with a flagstaff, more bent backwards than that of the *Hydrophilus*, and not spatular. It was of a dark reddish brown. No extraneous matter was interwoven with the web. The manner of spinning it was the same as that adopted by the *Hydrophilus*, as was the form of the spinning organ and the relative position of the male and female. It is not easy to give a clear idea of the form of these curious nests in words; but my sketches, which are left in Mr. Newman's hands, may perhaps convey a better. About two hours were employed in the construction of each nest.—*W. J. Bernhard Smith; 1, Plowden Buildings, Temple, July, 1856.*

[I shall be most happy to show Mr. Smith's sketches to any entomologist desirous of seeing them.—*Edward Newman.*]

Capture of Ochina Ptinoides in Cumberland.—I took about a dozen of *Ochina*

Ptinoides on the ivy growing against the wall of Lanercost Abbey in the beginning of this month.—*Thomas John Bold; Long Benton, Newcastle-on-Tyne, July 21, 1856.*

Capture of Anthribus albinus at Pembury.—I do not collect Coleoptera, but was fortunate enough to meet with the rare *Anthribus albinus*, on a wet spongy spot of ground near Pembury.—*J. Jenner Weir.*

Mononychus Pseudacori.—On February 6th I found a living specimen of *Mononychus Pseudacori* in a bottle with laurel leaves, which could not have been captured later than November 14th: the leaves that were intended to be its death were most likely its sustenance.—*George Guyon.*

Edwardsia vestita.—In my note on this curious tubicolous Actinioid (Zool. 5180) I omitted to mention that Mr. P. H. Gosse gave me the zoological history of the animal, and pointed out its identity with the form from the Ægean, as described by Professor Forbes. Since I last wrote I have obtained a few other specimens. They live remarkably well in the aquarium, making fresh cases from mud, sand, bits of seaweed, &c.; and are so hardy that one bore a three days' journey by post, in a little tin box, to a distant part of Ireland with perfect safety.—*W. Alford Lloyd; 19 and 20, Portland Road, Regent's Park, London, July 26, 1856.*

Occurrence of the Serotine Bat in the Isle of Wight.—On the 3rd of January, while at Ventnor, something alive was brought to me wrapped up in a duster, with the inquiry whether I wanted a “rattle-mouse:” having no very clear ideas of what the animal bearing that cognomen might be, I shook the cloth into a foot-tin, immediately covering it with a fire-guard, when I found the mysterious stranger was a Serotine bat, a species stated in Bell's work to be nearly confined to the neighbourhood of the metropolis, but which, I am told, is not uncommon in the Island. It was taken hybernating in an old chimney, and immediately ate some raw meat left with it, and in four days' afterwards would take it from the fingers, and suffer itself to be stroked. I often allowed it to fly about the passage of an evening, and remarked (contrary to what is stated of some species) that it could rise and take wing with ease from the flat surface of the carpet: it frequently slept for several days during the colder weather; and on March 7th it was found dead in the cage suspended by the hinder feet in the usual attitude of rest. That it knew me I would hardly venture to say; but certainly on one occasion it squeaked in alarm when another person offered to touch it, which it never did with me after the first few days.—*George Guyon.*

Nugæ Helveticæ: Scraps relating to Natural History gathered during a Tour in Switzerland in the Summer of 1855. By Rev. W. T. BREE, M.A.

“Lend me ten thousand eyes.”

Troilus and Cressida.

A NATURALIST touring through the mountain-passes of Switzerland, more especially if it be his first visit to that charming country, seems to stand in need of at least three pairs of eyes,—one to look to his own steps or those of the brute animal on which he may chance to be mounted, a second to view the magnificent and glorious scenery by which he is surrounded, and a third pair to examine the lovely plants and insects which present themselves to his notice at every turn. Now as no man (since the days of Argus) is possessed of more than one pair of eyes, it seems to follow inevitably that one or more of the above objects must be but insufficiently attended to: either the tourist's own steps, the scenery, or the plants and insects, must to a certain extent be neglected. Moreover, there is commonly by far too much of haste and hurry shown in making these mountain excursions; for though they are usually performed at no greater speed scarcely than a foot's pace, yet even that slow progress is far too rapid to allow the tourist time to pause and gaze his full upon the landscape, to catch the insects, and pluck the plants he covets: still less is there time to wander out of the main track, roam about as he would wish to do, and search for them at leisure. The way too, it may be, is long and perhaps hazardous, or the evening may be drawing on, or the weather threatening: any how time presses, and progress *must* be made onwards; so that the tourist is compelled most reluctantly to turn his back upon scenes before he has half contented himself with looking at them. There is on these occasions, if I may speak from my own experience, a sort of painful feeling excited—a feeling, as it were, of being unsatisfied in the very midst of plenty: one is absolutely perplexed and bewildered by the multiplicity of beautiful objects which crowd upon the senses,—rocks and snow-topped mountains, glaciers, lakes, torrents, waterfalls, gorges, ravines, precipices, valleys, pine forests, plants, and insects: who can take in the full enjoyment of such manifold beauty at a gulp? In short the cake, so to speak, is a most rich and excellent cake, but it really is too full of plums and sweetmeats.

One of the things which most forcibly strikes a naturalist in traversing
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the Alpine passes (I speak only of what occurred in my own case) is the extreme scarcity, I might almost say the absence, of wild quadrupeds and birds; neither game nor vermin presented themselves to view. In two instances, during the tour, a black squirrel was observed in or near a pine forest; and once while botanising I started a large mouse from under a thick coating of moss. Such was the scanty list of quadrupeds! Our mountain rambles, it ought to be stated, were principally confined, or nearly so, to what I may call the common-place excursions of a Swiss tourist; such *e.g.* as the ascent of the Rigi, the Brunig Pass, the Wengern Alp and Grindelwald down to Meyringen, the pass of the Grimsel, the Simplon, the Tête Noire, the Gemmi, &c., and several excursions around Chamouni, and last, but not least in beauty and interest, those exquisite passes on the Jura range on either side of Moutier: perhaps, therefore, we had no right to calculate upon seeing the chamois, nor still less the marmot, at large and in their native mountains. Accordingly we rested satisfied with viewing these shy animals in a state of confinement. We had, however, flattered ourselves that we were to have seen eagles, kites, and the like, soaring over the mountains, and adding to the savage grandeur of alpine scenery. One small hawk was the only bird we saw of this family. No wild fowl appeared to frequent any of the lakes, with the exception of a solitary wild duck seen on the large dirty-coloured tarn (Dauen See) near the top of the Gemmi: a single kingfisher was observed on the lake of Thun; and now and then, but very rarely, a wheatear, or a yellow wagtail, might be seen in the mountain valleys. On one occasion I remarked a bird which was unknown to me, scarcely so large as a thrush and not unlike in colour;* and once I remember to have observed a chaffinch. But birds of all kinds were so scarce, that whenever one *did* occur it was remarked as something unusual, with the exclamation, "Why, there's a bird!" Towards the higher part of the Gemmi pass a number of large black-coloured birds were observed in the air, which at first we made no doubt were rooks and jackdaws, but on nearer approach their note was found to be quite unlike that of those birds, and different indeed from any that I had ever heard before. Could the species have been the redlegged crow or chough? with whose note I am unacquainted. The water-ouzel, a lover of pure, limpid, rocky rivulets, is a bird of far too refined a taste to frequent the dirty torrents that are met with among the Oberland Alps: I remarked the

* The Alpine Accentor?

absence of the species. These alpine rivers having for the most part their source and origin amid the glaciers, are rendered turbid and filthy by the moraines, and rush down in an impetuous muddy flood, defiling the water throughout its entire course, and in point of colour precisely resembling the contents of a mason's bucket, a circumstance which, while it sadly detracts from the beauty of the landscape, curtails also (as it should seem) the Fauna of the district; for, if I am rightly informed, no trout or other fish, or very few at least, inhabit these impure streams, and the water-ouzel, as already stated, seems to scorn them. The bird, however, is a native of Switzerland; and in the valley, near Moutier, on the Jura, I had the pleasure of seeing it curtsying, as its manner is, on the rocks, and skimming over a deliciously limpid stream sufficiently stocked with trout to excite the spirit of a lover of the angle. I have remarked already on the extreme scarcity of birds throughout the tour: one ornithological treat, however, we had in perfection. While we were standing in the spacious area at the west end of the cathedral, at Berne, for the purpose of viewing the edifice, my eye caught a distant glimpse of a swift, as it rapidly passed behind the roofs of the houses. The bird was out of sight in a moment; nevertheless I felt confident it was a swift, and a fine one too. This was on the 14th of September; and I thought the appearance of a swift so late in the season would cut a figure among the memorabilia to be noted in my 'Naturalists Calendar.' I had not seen a swift since August 10th, at Antwerp, where many were seen in the evening of that day screaming high in the air over the town. On ascending the tower of Berne cathedral in order to get an extensive view of the surrounding country, I observed some twenty or thirty swifts sporting about at a great height above the spire. The man who lives in the tower and shows it to visitors proved to be somewhat of an ornithologist; and perceiving my attention to be greatly attracted by the birds, he immediately cried out "Cypselus alpinus,"—words which were soon verified to my entire satisfaction; for presently a swift approached the battlements, and flying within only a few feet immediately over my head entered the interstices of the architectural ornaments of the building, where she had still a brood of young ones, which were heard to chirp merrily to greet the approach of their parent: the visit of the parent bird to the nest was repeated several times while we remained on the tower, and it afforded me a closer and far better view of the bird than I could otherwise have obtained. The alpine swift is a much larger bird than the common one, of a dingy brown colour, and whitish on the breast and belly: in

the shape of the wing and outline of the entire form, as well as in their general manners and evolutions in the air, these birds so exactly correspond with our native species, that but for their superior size—they look almost as big as little hawks—the close view I had of them, and, I may add, the broad hint received from my friend of the tower, I should certainly have passed them by as no other than my old familiar friends and favourites. I did not hear them scream or utter any note, which would have given me much pleasure, if scream they do, as is most probable. In answer to the inquiry, “How late in the season do the swifts remain at Berne?” I was informed that they stay till about the beginning of October, and that they arrive in March or April. I looked out for them near the cathedral on the 16th of September, but could see only two; doubtless the pair which had the brood of nestlings in the tower.

Of the fishes worthy of remark to be met with in Switzerland, I regret to say that I can speak but little, having had no opportunity of seeing them except on table, when of course their interest to the ichthyologist has in a great measure evaporated. On one occasion, at Brienz, we had served up for dinner the celebrated “Lotte,” a very excellent fish when plainly dressed; but in this instance it was so disguised and enveloped in a profusion of thick sauce, (their cookery here is oftentimes abominable), that it was not without difficulty I recognised my old acquaintance the “Barbolt,” as the fish is called in Warwickshire (*Lota vulgaris*). At Geneva we several times met with “Farra,” a rather soft and delicate fish, which I take to be the Gwiniad of Wales, and the “Skelly” of Ullswater and the Lakes (*Coregonus fera*), or some nearly allied species: they were of a fair size, weighing, I should guess, from a pound and a half to two pounds each. Some of our party pronounced them to be by far the best fish we met with during the tour: for myself I should give the preference to the Lotte, always, however, *barring the sauce*. At the same *table d'hôte* one day appeared a large fresh-water trout, of perhaps twelve or fifteen pounds' weight, the produce probably of the adjoining lake: the meat was firm, of a yellowish pink colour, and well flavoured enough, but by no means so good as that of an English trout of a pound weight when in proper season. The pike of the Swiss lakes, so far as I had an opportunity of judging, I did not think excellent of their kind: as might be expected, they grow sometimes to a very large size. At Thun I saw nailed up against the side of a net-maker's house, *in terrorem*, as it were, like vermine on a gamekeeper's wall, the skulls of five or six large pike with their jaws expanded outwards,

making a very formidable appearance. Judging from the dried heads, the fish when alive I should suppose would hardly have weighed less than from twelve to twenty pounds each, or perhaps more. The bleak, or at least a small fish which I could not distinguish from that species, abounded in many of the lakes, and seemed to afford incessant occupation and amusement to the juvenile anglers of the district: the boys, I was informed, were catching "Sardines," which may be the native name for bleak: the true Sardine, it is scarcely necessary to say, is an inhabitant of the salt water. The exquisite brilliancy and vivid colour of the water as it issues out of the lakes of Geneva and Lucerne must be seen to be duly appreciated.

No species of snake or viper was observed during the tour, though very many spots were visited which appeared to be peculiarly well adapted to the harbouring of such reptiles. Lizards (*Lacerta agilis*) were not uncommon.

Though birds, as has been said, seemed scarce in Switzerland, the country is rich in insects. I allude particularly to the diurnal Lepidoptera, and such species as from their nature and habits are obvious, and obtrude themselves on one's notice; for there was no time for seeking after rarities, which might lie hid by day, and required an industrious search for their detection.

Our tour, it should be observed, was not designed to be entomological. If insects *should* present themselves, and now and then be captured, so much the better: they would be (as Dr. South would have said) "*like paper and packthread, all into the bargain.*" But the sight of so many butterflies that one had never seen before, or at least never seen before *alive*, and among them several which are justly considered to be of extreme rarity as natives of Britain, was enough to rouse the spirit of an old fly-catcher who had long since laid aside the net. I had provided myself with no sort of apparatus, either for capturing insects or preserving them when caught, save only a small corked box and a few pins. The only implement I had of the former kind was my hat, and that hat a rather low-crowned, broadish-brimmed, flexible affair, which, I believe, would be called in the vernacular, a "*wide-awake*," perhaps the most awkward contrivance for the purpose that can be imagined. With this, however, I succeeded after a sort in taking above twenty species of Papilionidæ, which I had never caught before, and now and then contrived to knock down an Apollo as he softly floated through the air (the flight of this insect is something very peculiar) or sat with expanded wings on the blossom of a thistle. Not knowing the specific names of foreign insects, and having

no sufficient book at hand to assist me, I cannot attempt to enumerate the species. *Hipparchiæ*, *Fritillariæ*, and *Coliades*, were among the more prevailing families, especially the former. *Vanessæ* appeared to be far more scarce; *V. Antiopa*, a rarity now-a-days in Britain, the least so of its genus. But this insect soars about on such a matchless wing as to be no easy capture with a "wide-awake," and though many were seen not more than one specimen fell to my lot. I was particularly struck with the comparative scarcity in Switzerland of some of our most common native species; *e.g.*—I had been in the country, moving about in the brightest and most favourable weather for a whole week or more, before I met with a single specimen of *Vanessa Urticæ*! Two specimens of *V. Polychloros* and two of *V. C-album* were all I saw; only one specimen each of *V. Io* and *Atalanta*, and these towards the very end of the tour! The above-named five species, or most of them at least, I should have expected would have been seen almost in swarms. *Cynthia Cardui* did not present itself, nor *Hipparchia Tithonus*: and in spite of all the pine woods and shady groves which might seem to afford so suitable a habitat for *Hipparchia Egeria*, I observed only one single specimen. *Hipparchia Megæra* was met with very sparingly in one locality only, at Meyringen. In lieu of it, however, an allied species was not uncommon, which one might almost fancy to be a cross (if such things ever happened) between *Megæra* and *Janira*; I mean that it partook more or less of the markings and characters of each of these two species, while it was abundantly distinct from either: so beautiful are the varied counter-changes and combinations in the works of Nature! The *Hipparchiæ* being, *par excellence*, *mountain-flies*, as such are, of course, particularly liable to encounter all sorts of changes in the weather,—sudden alternations of mist and sunshine: accordingly they know how to "make hay while the sun shines," or, in plain words, to take advantage of the very first ray of sunshine, and come forth and enjoy it. Of this I witnessed, what was to me, a very pleasing instance. While at Chamouni, like most other visitors, we ascended the Flegère, an eminence (as I am informed) of rather more than 7,000 feet above the level of the sea, resorted to on account of the advantageous view it affords of Mont Blanc and its accompanying range of snow-clad peaks. The morning was dull and misty, with a threatening of rain; but they who *should* be best judges of the weather pronounced that the day would be fine; so we started for the Flegère. On arriving at the summit a dense fog prevailed all around; no mountains were visible; indeed there was no seeing many yards before us. The

visitors for the most part retired to the chalet to partake of refreshment, or amuse themselves, as best they might, by looking at the trinkets and curiosities which are there exposed for sale. For my own part I set to work botanising, and thought myself well repaid by finding several plants I had not before met with. After a while the mist began to clear off, and the sun to peep out a little. In a moment the chalet was emptied of its inmates, all rushing forth to view the glories of Mont Blanc "rising in clouded majesty,"—a magnificent scene for the time it lasted, and all the more so, perhaps, because the mountain was only very partially revealed, the fog still obscuring the base and greater portion of the entire range, and thus throwing an air of mysterious sublimity round the whole. But to return to the butterflies, which I may seem to have forgotten. The very first ray of partial and subdued sunshine (for such only it was) which, as I have said, caused the visitors to issue out of the chalet, brought out also on the wing a number of pretty little Hipparchiæ, not so large as *H. Tithonus*, with a peculiar iridescent bloom resembling shot silk on the upper surface of the wings. I took several specimens while the sunshine lasted. In about a quarter of an hour the mist returned; the sun was obscured; the curtain dropped upon Mont Blanc; and no more Hipparchiæ were to be seen. In the hope of finding them at rest I searched diligently among the short grass and herbage over which they had been flying, but not a single specimen was to be met with: they had made the most of the sunshine while it lasted, and having had their brief enjoyment had retired to rest for the day, secreting themselves beyond the ken of the entomologist. Now it may very naturally be asked, "What is there extraordinary in butterflies flying about when the sun shines, and, like the marigold,* going to bed again when *he* does?" I mention the circumstance as illustrative of the promptness and alacrity with which these little *mountain*-flies availed themselves of the very first and (as it happened) only spurt of sunshine that was to be had that day. It should seem almost as if they had *known*, that for that day at least, it was "now or never" with them; so they lost no time, (as how many more intelligent beings often do!) but wisely seized the first opportunity. I do not recollect to have observed exactly the same species of Hipparchia in any other spot.

It may not be out of place here to notice a few of the stations

* "The marigold, that goes to bed with the sun,
And with him rises, weeping."

which appeared to be especially favourable for insects, without meaning, however, to say that others equally good, or perhaps better, may not be met with: I speak only of such as proved productive in my own case. At Meyringen, behind the church and towards the waterfall of Alpbach, there is some excellent ground, and especially in the neighbouring wood, where there is the ruined tower of an ancient castle. The broad tract of denudation caused here by the impetuous floods and torrents which occasionally rush down from the Alpbach, so abounded with a kind of large grasshopper, that it was difficult to set a foot without treading on them; they started up in numbers at every step: they appeared to be of two species, or at least were of two colours, some having the lower wings of a bright red bordered with black, others with the lower wings blue. The first specimen I saw on the wing of the former kind I took at first sight for some species of copper butterfly. These insects were confined, or nearly so, to the above-mentioned barren tract of dried mud and stones, which was entirely devoid of all vegetation, save here and there a small patch of *Saxifraga autumnalis*, *Gypsophila repens*, *Linaria alpina*, or the like, which had cast such firm anchor among the stones as to defy the fury of the floods, or more likely had sprung up from seed since the occurrence of the last deluge from the Alpbach.

Near the chalet, opposite to the Wengern Alp, besides other interesting things, I met with a species of *Mancipium*, allied to *M. Daplidice*, to which I afterwards saw in the museum at Geneva the specific name of "Callidice" attached. Close to the upper glacier, at Grindelwald, I captured a bright specimen of *Colias Hyale*. To one like myself, unaccustomed to a glacier country, it seemed strange to find butterflies in immediate juxtaposition with perpetual ice! The steep sunny side of the mountain, as you descend from the Grimsel into the valley of the Rhone, abounded with butterflies,—more than I can enumerate, or had time to catch when on the spot. Here was to be seen *Parnassius Apollo* floating about like a large white feather in a gentle breeze, *Lycæna Virgauriæ*, *Hipparchia Hero*, *Colias* (a pale alpine species) *Hyale* and *Edusa*, and many species of fritillary, and among them one much resembling *Argynnis Aglaia*,* but differing in the under side of the lower wings, which were scarcely metallic, having the silver spots nearly obsolete,—a closely allied, yet distinct species. In this genus, as well as in that of *Melitæa*, it may be remarked that an apparently slight discrepancy, provided only it be

* *A. Niobe*?

of the right sort, is enough to constitute a species. In both there are instances of species unquestionably distinct, which yet so much resemble each other that a common observer might be apt to pass them by as identical. Thus, *e. g.*, we have *A. Adippe* and *Aglaia*, and again *Aglaia* and the species just alluded to. In the genus *Melitaea*, likewise, there is a great resemblance between *Euphrosyne* and *Selene*, and again between *Selene* and *Dia*. On the present occasion, when descending into the valley of the Rhone, I took a *Melitaea* closely approximating to *Euphrosyne*, but nevertheless distinct.

I would strongly recommend an entomologist who may happen to go to Brieg to pay a visit to the low grounds, partly meadow and partly under cultivation, which lie between the town and the Rhone, scarcely a quarter of a mile from the former. In this locality, within twenty yards of each other, and in less than half as many minutes, I took (August 30th) *Argynnис Lathonia* in fine condition, apparently fresh from the chrysalis, and *Papilio Podalirius* a good deal the worse for wear; and likewise tipped the wings of *Mancipium Daplidice*, which, however, escaped me. In the same meadow-ground the botanist, too, may find some things to his liking, such, *e. g.*, as the quaint little orchid, *Herminium monorchis*, and a very slender, delicate species of *Erythraea*, perhaps one of the varieties of *E. pulchella* (*gracilis* of some catalogues), &c., &c. All the way up the Simplon from Brieg butterflies were to be seen in plenty. At the half-way house where horses usually stop to bait I took a very dark, grim-looking variety of *Pontia Napi*, which in the Geneva Museum I found was named "*Bryoniæ*." I doubt its being more than a variety, the alpine phase, as it were, of the species. *Lycæna Virgauriæ* abounded on the flowers of a species of wild mint by the road-side near the inn. Just behind the Hospice on the Simplon lies a tract of ground to the heart's content of either botanist or entomologist. A lovely little gentian (*Gentiana bavarica*) enamelled the surface with its bright deep blue flowers; it so much resembled *G. verna* that at first I took it for that species, blossoming at so late a period of the year for a spring flower (August 29th) in consequence of the altitude of the situation. The alpine anemone made a conspicuous figure, though its blossoms were passed, and it showed nothing but leaves and a large fuzzy head of seed. Here, too, occurred, among other interesting flies, the pale-coloured *Colias* before alluded to, a well-known species, no doubt, to entomologists, but which, for want of knowing its specific name, I distinguish as the alpine *Colias*, for it seemed to be

confined chiefly to the higher mountain regions, in many of which it was far from scarce.

The neighbourhood of Chamouni must not be omitted among the stations rich in Entomology. Near the woody parts of the valley *Vanessa Antiopa* seemed to be quite at home. On ascending the mountain towards the Chapeau, on the opposite side of the glacier to Montanvert, several species of *Hipparchia*, some of them more or less approaching to *H. blandina*, appeared in abundance.

Under the head of entomological stations, I will only add, that in the botanical garden at Geneva, on a cloudy day, I took several specimens of *Melitaea Dia* at rest upon the flowers; it seems to be not an uncommon species in Switzerland.

On the Botany of the Alps it is difficult for a lover of plants to speak in measured terms. The Flora is indeed a rich and dainty one. There are so many beautiful and interesting species constantly presenting themselves as new to the British botanist, and so many more quite familiar to him as garden favourites, but looking tenfold more beautiful when seen luxuriating at large and growing as Nature bids them, that the vasculum and the drying-book very soon become most inconveniently crowded with specimens. Speaking of alpine plants in general, I should say there is about them a sort of compactness of character, an elegant terseness (if the expression may be allowed), which, in my eyes, gives a charm to these "miniatures of Nature," beyond even that which is afforded by the more gorgeous splendour of a tropical Flora. The bare foliage of an *alpine* species, to say nothing of the blossom, is oftentimes of exquisite beauty: witness, only as one instance out of many, the foliage of *Soldanella alpina*; and, I may add, that of the entire genus *Saxifraga*, *Androsace*, &c. Even the coarse and robust (Linnæan) genus *Tussilago* has an alpine species of comparatively diminutive stature and of great elegance. Then, again, their style or mode of growth is characterised by neatness. Issuing out of a mere crack on the perpendicular face of a precipice, and forming dense verdant tufts and cushions, or nicely fitted into the exact shape and mould of the nooks and crevices they occupy, they seem, as it were, to be dovetailed into the very rocks they grow on. The sight of these little mountain beauties repeatedly brought to my mind the remark which I well remember to have been made by an old gentleman, long since gone to rest, who in his day used to take great delight in his flower garden: looking at some rather inconspicuous flower (I think it was a species of *Silene*), he would say, "I like the cut of that flower; it smells of the Alps."

All tourists in Switzerland, whether botanists or not, are apt to be taken (as well they may) with the beauty of the gentians, the blossoms of which are, in many instances, so splendid and conspicuous. Some half-score species or thereabouts fell under my observation; among the more interesting were *Gentiana bavarica* (as already stated), *G. asclepiadea*, *G. lutea*, *G. Pneumonanthe*, and *G. ciliata*, the latter adorning with its large light blue flowers the road-side through the pass near Moutier, along with very large specimens of *G. amarella*, the latter in great profusion. Most of the species were in full perfection; but, unfortunately, the queen of the gentians (*G. acaulis*) was passed and gone to seed. It would have gratified me much to have seen this old garden acquaintance in its glory on its native mountains. A blossom so large in proportion to the plant that bears it might seem almost preposterous; but He who formed it knew how to make it at once graceful and magnificent.

The genus *Saxifraga* may be regarded as especially alpine. I met with about sixteen or more species (or varieties), being somewhere about half the number enumerated as natives of Switzerland. What I considered as one of the greatest prizes among them was *S. mutata*, a rare species apparently, but growing not sparingly in a picturesque little gorge about a mile from Thun. I saw it nowhere else. Here it was in full flower on the 13th of September. I gathered a good store of specimens, taking care, however, to leave plenty for the next comer, and, as I trust, for generations to come. That selfish greediness, too common, I fear, in the present day, which would prompt a botanist to exterminate a rare plant from its native locality is much to be reprobat d. Let him by all means leave enough to propagate the species, though he himself may never have the chance to visit the spot again. The root of *S. mutata*, unlike that of the allied species, is only biennial, in which respect it stands unique, and affords, I believe, the one solitary instance of the kind throughout the extensive genus to which the plant belongs. Of our British species *S. autumnalis* was the most abundant, occurring profusely and in great vigour in almost every situation suitable to its growth; and near many of the glaciers (as at Grindelwald, *e. g.*, and Rosenlau) grew the beautiful variety *crocea*, with its rich deep-coloured blossoms. *S. stellaris* I observed in many places, but by no means in such abundance as I have often seen it nearer home. What most surprised me was the non-appearance of *S. Hypnoides*, which so copiously adorns our English, Welch and Scotch mountains. The species, I perceive, *does* find a

place in the Helvetic Flora, as a rather doubtful native;* but nothing that could be mistaken for it, or for any of its countless varieties, presented itself during the course of our Swiss rambles. Nor had it, I may remark, as appeared to me, its exact analogue or corresponding species to take its place in the scale of Nature. I met with no species of Robertsonian Saxifrage (the London pride family), save the small *S. cuneata*, the blossoms of which were over. *S. rotundifolia* was in flower in the Brunig Pass on the 20th of August, and on the Rigi on the 18th; and *S. pyramidalis* at the fall of the Handek on the 27th; *S. aspera* on the Simplon, August 29th; and its smaller compact variety (?) *Bryoides* at the Mer de Glace, September 5th. *S. oppositifolia* occurred in very many places; but in every instance the flowers were gone by. It may seem tedious to be thus minute in assigning dates; but it serves to show the difference which altitude makes in the period of a plant's flowering. Of the four or five last-named species, all but one (*S. oppositifolia*) usually bloom in our English gardens about the month of May.

Let the botanist who has the opportunity not fail to pay a visit to the lower glacier at Grindelwald. Close below the termination of the ice, where the water runs in various shallow channels among the bushes and low shrubs, he will find one of Nature's own botanical gardens, ready made to his hand. That very lovely plant, *Epilobium rosmarinifolium* (of the catalogues), *Saxifraga cæsia*, *S. muscoides*, *S. androsacea*, *S. autumnalis* and its variety, were here in full beauty, August 23, along with perhaps half-a-dozen other *Saxifrages*, gone to seed, *Androsace lactea*, and many other interesting plants, more than I can enumerate. It struck me as being one of the richest spots for botanising that I ever met with. Nearly the same remark will apply to the vicinity of the glacier at Rosenlaui. I suppose that the seeds of many plants, or perhaps the plants themselves, may from time to time be washed down from above by the waters that issue from the glacier, and that they take root and vegetate as soon as they are clear of the ice. And this may be the reason why the immediate vicinity below a glacier exhibits so large an assemblage of plants, some of which usually and legitimately belong to still more elevated zones.

Parnassia palustris grows almost everywhere in Switzerland, not

* It is inserted both by M. Schleicher and M. Thomas in their Catalogues of Swiss plants; but M. Gaudin, probably a far better authority, though he introduces the plant into his 'Flora Helvetica,' remarks, "Species formosa nusquam in Helvetia occurtere videtur."—*Synopsis Floræ Helveticae*.

only, as with us, on moist boggy places, but I observed it also on dry slopes. Sometimes the blossoms were as large as a shilling.

Near the hospice or inn at the top of the Grimsel, among

“The living flowers that skirt the eternal frost,”

was to be seen *Soldanella alpina* blossoming close to the very edge of the snow, and even under the snow itself. The plant occupied the entire surface for a considerable space, itself forming, as it were, the turf. Hard by was a handsome species of *Pedicularis* (*P. recutita*, I believe), which I did not observe elsewhere. *Viola biflora* was scattered about in abundance, and enlivened the scene with its merry yellow flowers, as did the snow-white blossoms of *Ranunculus aconitifolius*. The double variety of this last plant has from my earliest recollection been a common ornament of our gardens, under the name of “Fair maids of France;” but I never could meet with the single in any nursery or collection, and have often asked for it in vain. Why it should not find a place in the parterre I am at a loss to understand, as it strikes me as being a very elegant plant, quite as well worthy of our notice as the double variety, and most probably of no less easy culture. I cannot admit the justness of Mr. Curtis’s remark on this subject in one of the earlier volumes of the ‘Botanical Magazine,’ where he says:—“This is one of those plants which derives its beauty from the multiplication of its petals; *in its single state no one would think it deserving of culture as an ornamental plant*; when double, few plants come in for a greater share of admiration.” Who would have thought that such a remark could have fallen from a botanist! I can scarcely think that any one who had once seen this *Ranunculus* in bloom upon the mountains could so malign its character. It was one of the plants I had long craved to see alive, and which, accordingly, gave me especial pleasure to behold. The truly elegant and unassuming plant, *Astrantia minor*, I had been told and taught to believe was a rare species even on the Alps; accordingly, the first specimen I met with I looked upon as somewhat of a trump, but soon found that few plants are more common: it grows all about the Grimsel pass, and in many other places. *A. major*, a far more common plant in the gardens, I did not chance to meet with.

In such elevated situations as the Alps many of our early spring-blooming plants, like the *Saxifrages* already alluded to, do not come into flower till late in the summer; thus, *Cardamine pratensis* and *Caltha palustris* were to be seen in full beauty towards the top of the

Grimsel on the 27th of August, and the former plant scarcely in perfection on the Wengern Alp on the 23rd.

Arnica montana, a bold, handsome plant of its family, which for its excellent medicinal properties obtained, among the old practitioners, the title of "Panacea lapsorum," occurred in various places, as on the Rigi, the Grimsel pass, the Wengern Alp, &c. Printed handbills advertising the medicine (which is in truth not only a popular, but a very efficacious remedy in the case of hurts and bruises) lay about in conspicuous places in the hotel at Chamouni for the information of visitors. The tincture, I am informed, is prepared from the *leaves*, and therefore need not involve the destruction of the plant; had it done so, the species, I think, must soon have been exterminated from the mountains; for, though it grew, as I have said, in very many places, it did not appear to be very abundant in any; and I am not aware that the plant is ever cultivated for the sake of its medicinal uses.

Switzerland seems to be a country peculiarly favourable to the fruiting of its native berry-bearing shrubs. The scarlet elder (*Sambucus racemosa*), *e. g.*, which, under the influence of an English climate, I believe, not seldom fails to mature its fruit, makes, in many of the Swiss valleys, a most showy and beautiful appearance, with its bright scarlet berries hanging in numerous bunches. For what useful purpose the berries are employed I was unable to learn, but observed that they are gathered and collected for *some* use, and that not as an article of food. On the Tête Noire, *Vaccinium Vitis-Idaea* produced unusually large clusters of berries, and these in such abundance that it would have been easy to have gathered an ample supply for culinary purposes in a very short space of time, and without moving many yards from one spot. And it is no bad tart, I may observe, that may be made of these berries, much inferior as they are to those of the cranberry (*Oxycoccus palustris*), for which they are sometimes put off and sold to such as know not how to distinguish them from the genuine fruit.

Again, to take another instance, *Hippophae Rhamnoides* in several places I observed to be almost smothered with its own fruit, the twigs and branches of the shrub being entirely enveloped, for the length of six or more inches, within a closely compacted mass of lurid orange-coloured berries, of a rather forbidding aspect, somehow involuntarily reminding one of physic. Whatever their actual properties may be, they *look* cathartic, if not downright poisonous. Linnæus, however, in his 'Flora Lapponica' and 'Flora Suecica,' describes the berries

as being very acid, and of a sharp vinous flavour; and (if I rightly understand him) tells us that the fishermen on the Gulf of Bothnia make a sort of preserve (Rob) of them, which imparts a most agreeable flavour to fresh fish.*

A writer in the September number of the 'Phytologist' (p. 97), speaking of the barberry (*Berberis vulgaris*) and *Epimedium alpinum* as the only British representatives of the order Berberidaceæ, says that "the influence of these plants on the general aspect of the country is most inconsiderable, and neither of them would be missed were they to disappear, except by the botanist and the nurseryman." This remark may be just and true enough as applied to Britain, because with us these plants are comparatively rare, except in cultivation; but (I am now speaking only of the barberry) not so as regards Switzerland, in certain districts of which the shrub greatly abounds; for instance, in some parts of the journey from Martigny to the Baths of Leuk whole tracts of barberry were to be seen loaded with scarlet fruit (there should seem to be no blackbirds and thrushes to devour the berries); and, the foliage having now (September 11) assumed a bright autumnal tint, the bushes looked almost as if they were on fire, and added a more marked and glowing feature to the landscape than a whole common of gorse in full flower does in England, being conspicuous at a distance, even on the slopes of the opposite side of the valley.

Being on the subject of the berry-bearing shrubs of the country, I may mention that in the street at Thun (September 14) I met a countrywoman carrying a basket of *red* currants, the produce, no doubt, of some garden, which struck me as being by far the largest I ever saw: the berries were quite equal in size to those of the finest *white* currants. I should have liked to have introduced the sort into England, though possibly it would have degenerated in our climate.

In general the cultivated fruits we met with in Switzerland (I speak of apples, pears and plums) were, I think I may say, about the worst of their kind that it is well possible to conceive, not many degrees removed from their aboriginal wild parents.

Few plants in Switzerland engage the attention of strangers more than does *Rhododendron ferrugineum*, or "the rock-rose," as it is

* "Baccæ sapore austero-vinoso gaudent, hinc conficiunt Piscatores sinum Bothnicum incolentes ex eis Rob, quod piscibus recentibus additum, iis gratissimum conciliat saporem."—*Flora Lapponica*.

"Baccæ acidissimæ pro embemmate piscatorum Alandiæ; Tingunt luteo colore." *Flora Suecica*.

vulgarly called. When growing, as it often does, in extensive masses, its dark rose-coloured blossoms afford indeed a splendid sight. Not a tourist scarcely, young or old, male or female, ascends the Rigi or other like mountain without coming down with his hat, cap, or bonnet (as the case may be), and the head of his alpenstock adorned with sprigs of this beautiful shrub, as a trophy in token, as it were, of the feat which has been accomplished. On the Gemmi I observed a large tract of the Rhododendron bearing pale pink or flesh-coloured flowers, of exquisite delicacy. A pure white-flowered variety, also, is sometimes met with, as I gather from dried specimens of it which I have seen.

The prevailing kind of alder among the Alps is quite a distinct species from the common *Alnus glutinosa*; the leaves are much smaller, sharp-pointed, doubly serrated, and downy, especially on the under side; the bark is of a gray colour; it is, I believe, *Alnus incana*. A light, airy tree, as compared with the lowland species, it does not form those dense masses of dark foliage, second only to the oak in beauty, which are so characteristic of its more common ally; and by consequence, though an elegant tree, is much less picturesque. Different, however, as the alpine alder is, whether viewed in a general way as an entire tree, or more closely examined in detail, it does not make so great a difference to the landscape as might have been expected; and I suppose that nineteen tourists out of twenty, unless they have a botanical turn, pass it by without being aware of the discrepancy. My fellow-travellers did not notice it until their attention was called to the subject.

It has often been remarked, and the fact, I believe, is brought home to the experience of all Swiss tourists, that in no point is the untutored eye more apt to be deceived than in its calculation of distance and of size. Amid the vastness of the surrounding scenery, large objects appear to be small, and distant ones to be near. A mountain or a glacier, for instance, which seems to be almost within a stone's cast of the spectator, is miles off! The pine forest which skirts the base of yonder mountain, on the opposite side of the valley, looks no better than an asparagus bed in summer trim; but approach it, enter into it, and behold!

“Insuperable height of loftiest shade.”

These pine forests decidedly take rank among the *fine things* of Switzerland; their solemnity and deep gloom; the profound stillness

which pervades them, interrupted only by the murmur of some distant waterfall or torrent, or the occasional roar of an avalanche; the blasted trunks and limbs of the pines, and their dry, shrivelled branches dangling with long beards of gray lichen; the golden carpet of moss spread beneath, embroidered with the delicate fronds of ferns; and, above all, the loftiness of the individual trees;—these and the like are the component elements of their grandeur. I dare not trust myself in an attempt to state precisely the height to which the pine trees attain. M. Gaudin, under the head of *Pinus Abies*, justly says, “*arbor excelsissima, trunco longissimo*,” the loftiest of trees, with the longest trunk. Heretofore the thought had repeatedly struck me, when looking at pictures and views of alpine scenery, that the pine trees therein depicted were unnatural, exaggerated representations, and portrayed as out of all proportion too tall, and especially as compared with their horizontal dimensions. But one lives to learn; and I now find that what I had presumed to criticise as faulty are faithful delineations of nature and strictly accurate. Even when standing singly, the Swiss pine does not seem disposed to spread its branches to any very great extent horizontally, but shoots up in a narrow cone, like the church steeple, which it often exceeds in height. As nothing like artificial pruning, or weeding out of some for the sake of the remainder, seems to be practised in the Swiss forests, the trees are left to grow at random, just as Nature had scattered the seed; and so thick do they stand sometimes, and crowded together, that it is still a marvel to me how they should attain the size they often do, and not rather starve and choke each other. Certain it is that, were our larch and fir plantations to be left without thinning out from time to time, and allowed to stand so thick, the trees would soon come to nothing, and would smother and kill one another in less than fifteen or twenty years.

They have a practice in Switzerland of sometimes felling the fir trees, not, as is usual, at the very base of the trunk, but at two or three or even five or six or more feet *above* the surface of the ground, and consequently leaving a set of most unsightly stumps of the above dimensions to rot on the ground at leisure. This should appear to be a most wanton waste of just so many feet of the best of the timber. Why the method should be adopted I have failed to ascertain, unless it be (as I have heard it suggested in explanation) that the trees have been felled during a deep snow, when it would be impossible to get at the base of the tree near the surface, and so there was no help for it; but, if such be the case, why not wait awhile, and defer the felling

till the snow is gone? It has been suggested, again, that these stumps may have been left by way of defence and security, with a view to arrest the onslaught of an avalanche.

No mention has yet been made of the magnificent walnut trees with which, in many parts, the country abounds, as at Interlachen, *e.g.*, and other places, and which, on account of their size, age, and highly picturesque character, might well demand more than a passing note of admiration. But the length to which the above rambling remarks have already extended reminds me that it is time to draw them to a close; but, before I do so, a word or two must yet be added on the subject of ferns. It would be no better than a simple truism to say that ferns abound in Switzerland, and adorn and beautify the rocks and ravines, go wherever you will: that is most true. Nevertheless, I do not hesitate to confess that in this particular department of Botany I was greatly disappointed: I mean that I had expected to have found both *more* species, and several of greater rarity. With the single exception of *Cystopteris montana*, I met with no fern that was new to me, I mean that I had not previously seen and gathered in a wild state; and, with the further exception of *Asplenium septentrionale*, none that I had not repeatedly found in Britain. The last-named species grew sparingly near Chamouni, on rocks by the path, as you begin to ascend to Montanvert. Afterwards, in making the Tête Noire pass, the chinks of the stone walls on either side of the road were seen absolutely infested with the fern: it grew in such abundance one might have thought that in constructing the walls the plant had been employed instead of mortar to cement the stones together. This occurred near Argentiere, the place where the passports are submitted to the Sardinian authorities. *Cystopteris montana* I found in two spots only, though I was on the look-out, and searched for it diligently in other likely places. At Rosenlaui, between the glacier and the inn, it grew in a little rocky recess or *cupboard*, in shape and size not much unlike a small oven open on the side—a most snug birth—of which it seemed to be the sole proprietor, occupying the entire area or floor of the cupboard, which consisted of wet black soil. The fronds, both fertile and barren, were here of a rather diminutive size. On the Gemmi the *Cystopteris* was met with in far greater abundance, and with much larger fronds, springing up amid a sloping heap of bare loose stones, just as *Polypodium calcareum* is seen to do in Yorkshire, Derbyshire, &c.; but here too, as at Rosenlaui, it seemed to be confined to one place only, close to the side of the horse-path, near the bottom of the mountain as you descend towards Kan-

dersteg. A more leisurely search, had circumstances permitted it, might very probably have been rewarded by the discovery of the fern in other parts of this fine and most interesting mountain. But the excursion over the Gemmi from the Baths of Leuk was, in point of weather, most unpropitious: a mist to begin with, increasing into so dense a fog that we might almost be said to have made this magnificent pass without *seeing* it: then set in a steady rain, and, what was nearly as disagreeable, the length and difficulty of the journey, coupled with the conveyance of the baggage, rendered it almost imperative to have recourse to a horse to ride on, a most sore encumbrance on such occasions to a botanist, who wants, of course, to dismount every ten or twenty yards to snatch some charming plant that is quite irresistible. Now mounting and dismounting from the back of a horse, equipped in alpine guise, is no such easy matter, and becomes not a little irksome if the operation has to be often repeated, as will readily be understood when it is stated that the high pummel of the saddle in front reaches almost to your breast-bone, and behind you is strapped a large sack of hay projecting a foot, or more, on either side, and surmounted by your own carpet-bag, &c., so that you sit, as it were, ingulfed within the saddle, from which it is not easy to disengage yourself, or to regain your seat when required: I wished my brute far away a hundred times; and now and then, in order to avoid temptation, actually turned away or closed my eyes against the beautiful plants that strewed the ground on every side. In making mountain excursions, let the botanist *eschew a horse*, whenever it is practicable to dispense with the encumbrance.

As in the case of certain insects already noticed, so with the ferns, some of our less uncommon British species appeared to be comparatively rare in Switzerland, as *e.g.*, *Asplenium Adiantum-nigrum* (of which I do not recollect to have observed more than a single specimen, and that a weak one), *Scolopendrium vulgare*, *Polystichum lobatum*, *aculeatum*, and *angulare*; and to these I think I might add *Lastraea oreopteris* (which, however, occurred in some abundance on the Rigi), and *Blechnum boreale*. Others again, to my surprise, I missed entirely, as *Osmunda regalis*, *Ceterach officinarum*, *Adiantum Capillus-Veneris*, *Lastraea fœniseccii* and *rigida*, *Asplenium lanceolatum*, and both the British species of *Hymenophyllum*, and, above all, what I had most confidently promised myself a sight of, *Asplenium fontanum*. Had it not been for the kindness of M. Gutherick, of Berne, I should have left the country without a specimen of this interesting fern. To that gentleman I am indebted for fronds, as well

as for a liberal supply of other alpine plants, for which my best acknowledgments and thanks are due. When I speak of the scarcity or the absence of certain species, again let it be borne in mind that my rambles were principally confined to the ordinary Swiss excursions; so that it is more than probable that the localities richest in botany might not have been visited. My remarks, throughout, relate only to what fell under my own experience. Speaking generally, I should not say that, on the whole, ferns in Switzerland attain a larger size, or more luxuriant growth, than they commonly do with us, and in some instances perhaps scarcely so much so. These are, however, exceptions. *Polypodium calcareum*, for instance, (call it *P. "Robertianum,"* if any prefer that name), sometimes exhibited gigantic fronds which quite surprised me, in size almost competing with an ordinary frond of *Pteris aquilina*! *Cystopteris fragilis*, again, and *Allosorus crispus*, were in some places extraordinary large and fine; and on the old bridge, at Berne, *Asplenium Ruta-muraria* grew in broad dense masses, a yard or more in diameter. I had fancied to myself that I had many a time seen *Polypodium Dryopteris* and *Phegopteris* at their best estate and highest perfection in various parts of Yorkshire, Cumberland, Wales, &c.; but in this I was mistaken. On leaving the chalet, or inn, which stands at the top of the Tête Noire, the road towards Martigny soon leads through a pine wood, in which these ferns struck me as displaying a grace and elegance of which I had never seen the like before. Under the gloomy shade of the pines the delicate fronds were scattered about over a surface of rich golden moss, with but little or no interruption from grosser vegetation. The spot seemed made on purpose to display their charms. To a lover of ferns it was an exquisite sight, which I shall not readily forget; and I felt inclined to exclaim with Henry, on sight of Anne Bullen—

“O beauty,
Till now I never knew thee.”

Asplenium viride, a local, if not a rare species in England, but where it is found growing in great abundance, was very plentiful in Switzerland, more so even than its (with us) more common ally *A. Trichomanes*.

In closing these remarks, I wish it to be understood that a few plants only out of numbers have been spoken of, and selected for more marked and particular observation. Scores of highly interesting

species have, of necessity, been wholly passed by in silence, belonging respectively to such genera, among others, as the following, viz. :—

Achillea	Cyclamen	Potentilla
Aconitum	Dianthus	Prenanthes
Alchemilla	Digitalis	Primula
Allium	Draba	Prunella
Anthericum	Dryas	Pyrola
Apargia	Erica	Rumex
Arabis	Erigeron	Salvia
Arbutus	Erinus	Salix
arenaria	Euphrasia	Sedum
Artemisia	Genista	Sempervivum
Asclepias	Geranium	Senecio
Aster	Geum	Silene
Astragalus	Globularia	Spiraea
Azalea	Gnaphalium	Tamarix
Bupleurum	Helleborus	Thalictrum
Buphthalmum	Hieracium	Thesium
Cacalia	Hutchinsia	Thlaspi
Campanula	Lactuca	Trifolium
Carduus	Luzula	Veratrum
Carex	Mœhringia	Verbascum
Centaurea	Myosotis	Veronica
Cerastium	Phyteuma	Vicia
Convallaria	Pinguicula	

But to speak of all these would far exceed my limits, and I must forbear. The bare mention, however, of the above names serves to recall many a lovely scene and pleasurable excursion : pictures, as it were, and images of beauty are called up, and vividly impressed upon the mind, never to be erased. To a naturalist, a lover of the picturesque or of sublime mountain scenery, Switzerland is indeed a delightful country. For my own part, I may say that I turned away from it with feelings of reluctance and regret, and have been

“ever since a fresh admirer
Of what I saw there.”

King Henry VIII.

W. T. BREE.

Entomological Botany (with more especial reference to the Plants frequented by the Tineina). By H. T. STAINTON, Esq.

(Continued from page 5139).

Cratægus Oxyacantha (continued).

Lyonetia Clerckella is also a denizen of the hawthorn-leaves in the larva state; it forms long slender galleries, far longer than those formed by any *Nepticula* of our acquaintance; moreover the caterpillar itself, unusually long, is seen, when the leaf is held up to the light, to be furnished with the six horny legs, which at once shows it is no *Nepticula* you have in view. *Cemostoma scitella* is a striking exemplification of the effects that may be produced by small and apparently insignificant causes: the moth—splendid little gem as it is—is seldom seen, nor is the larva itself any more generally known, but the larva mines, and its mines are brown: it is most busy in August. Hawthorn hedges are not naturally brown in August, but where *Scitella* abounds, the larva of that insect turns the hawthorn hedges brown. This is no exaggeration: the mine of each larva, it is true, is less than a sixpence, but three or four in one leaf is nothing unusual, and, where they do abound, to find an untouched leaf is not a common occurrence; hence the general aspect of the hedge, as we look along it, is brown or brownish, and this caused by the caterpillar of a moth so small that incipients wonder if it is possible to pin it.

Wonders thicken upon us as we approach the end of our list of hawthorn-feeders, for now we come to the consideration of *Bucculatrix Cratægi*: this larva may be found in August; it at first makes a very slender minute mine, in the form of a contorted gallery; but whereas in early life it thus eats only the parenchyma of the hawthorn leaf, it after a time ceases to eat such baby-food: it quits the mine—"the home where its childhood dwelt," it crawls along the under side of the leaf to a convenient nook, spins there a flat covering of silk, under which it lies concealed, like a good economist, "making both ends meet," till it has attained a very different appearance from that of its early days; it is now a gaily marked and highly ornamental little larva (as Professor Frey observes, the genus *Bucculatrix* contains the smallest external feeding larvæ we know), and from this time forward it ceases to seek any concealment, but feeds quietly on the upper or

under side of the leaf, eating the leaf half through: it now eats the epidermis; whether this merely implies that its digestive organs are stronger, or whether there is some chemical difference between the parenchyma and epidermis of a hawthorn-leaf, and whether the change that has taken place in the habits of the larva renders this change in its food necessary, I do not propose to discuss, but it would form an interesting chapter for some future Professor Johnstone to introduce into 'The Chemistry of the Common Life of a *Bucculatrix* larva.'

The genus *Nepticula* is well represented among the hawthorn-feeders: a green larva, a yellow larva and a yellowish larva are already known and distinguished by us, producing respectively *Oxycanthella*, *Pygmæella* and *Ignobilella*; and one or two other larvæ, not yet sufficiently learned, such as *Gratiosella* and *Regiella*. Of the last-named species I have a single specimen, taken at Dartford Heath, on the fence, in June, 1852.

Pyrus communis. Pear.

Pyrus Malus. Apple.

Speyer enumerates certain species as feeding both on apple and pear, then others which feed only on pear, and some which feed only on apple.

The species he gives as common to both plants are *Papilio Podalirius*, *Aporia Cratægi*, *Vanessa Polychloros* (can any one confirm the fact of this feeding on fruit trees? Mr. Foxcroft says he finds the larva on elder, but these he reputes to produce a distinct species), *Smerinthus ocellatus*, *Zeuzera Æsculi*, *Diloba cæruleocephala*, *Psilura monacha*, *Hypogymna dispar*, *Porthesia auriflua* and *P. chrysorrhœa*, *Gastropacha quercifolia*, *Clisiocampa neustria*, *Acronycta tridens* and *A. psi*, *Mamestra pisi*, *Orthosia stabilis* and *O. instabilis*, *Rumia cratægata*, *Ennomos alniaria*, *Alcis rhomboidaria*, *Amphidasis pomonaria*, *Hibernia defoliaria*, *Cheimatobia brumata*, *Nola cucullatella*, *Peronea Abilgaardana*, *Penthina variegana*, *Carpocapsa pomonella*, *Exapate gelatella*, *Cerostoma asperella* and *Swammerdamia Pyrella*.

It will be observed that all the above, excepting the far-famed *Podalirius* and *Nyssia pomonaria* are known as British species; *N. pomonaria* is a species far more likely to occur here than *P. Podalirius*.

Speyer cites as feeding on pear (and not on apple), *Gastropacha Pruni*, *Eriogaster everia*, *Cosmia pyralina*, *Dasympampa rubiginea*,

Scopelosoma satellitia, *Crocallis elniguaria*, *Amphidasis pilosaria*, *Ourapteryx sambucaria* and *Scythropia crataegella*, and he gives the following as feeding on the apple (not on pear), *Miselia Oxyacanthæ*, *Euthalia psittacata*, *Eupithecia rectangulata*, *Simaethis pariana*, *Hyponeuma Malinellus* and *Gelechia rhombella*.

The *Hyponeuma Malinellus*, which we have not yet found here, is an insect *as white as* *Evonymellus*, a character which none of our apple-bred specimens possess. Or do our specimens merely show an insular variation from the continental type? The point is worthy of consideration. Certainly with us what we repute *H. Padellus* feeds with great indifference on apple, pear, plum, &c. *Cerostoma scabrella* is also an apple-feeding species which Speyer has omitted to mention, but unfortunately I can say little about it, never having made its personal acquaintance. The *Phibalocera Quercana* may often be found under its slight web, on the under side of apple-leaves. The larva of *Gelechia alacella*, though not strictly speaking (as far as we at present know) either an apple- or pear-feeder, patronises those trees, feeding on the lichens growing on the stems. *G. Rhombella*, Speyer has duly noticed; *G. leucatella* is also an apple-feeding species, and *G. nanella* loves to feed in the flowers of pears, forming little galleries among the stamens, and uniting them with the pistil in a mode not strictly botanical. *Argyresthia curvella* feeds certainly in the leaf-buds of the apple and pear, though up to the present time I have never met with it. *Ornix guttea* feeds on the leaves of the apple, turning down a large piece, and eating the parenchyma from within, just as the better-known *O. Avellanella* does on the leaves of the hazel. *Coleophora paripennella* appearing quite omnivorous, of course eats apple; *C. anatipennella* is also sometimes found on apple, but *C. hemerobiella* is very constant in its attention to pear-tree; and as it and *C. nigricella* are often found in company, the latter is often assumed to be the juvenile form of *C. Hemerobiella*. *C. siccifolia* is sometimes to be found on apple-trees, though it seems more partial to hawthorn.

The next and perhaps the most important thing we have to mention is the black variety of *Laverna atra*, of which the larva feeds in winter and early spring in the buds of the bearing spur of the apple. Entomologists who have access to orchards would do well to look after this destructive, yet in-most-cabinets-desiderated insect.

Of the genus *Lithocolletis* there is the under-side-feeding *Pomifoliella* and the upper-side-feeding *Corylifoliella*. *Lyonetia Clerckella*

mines freely in apple-trees, and *Cemiostoma* *scitella* is also at times pretty abundant.

In the genus *Nepticula* two of the hawthorn-feeding species *Oxycaenthala* and *Pygmæella* feed also on apple, and a hawthorn larva, which is still undetermined, has likewise been found in apple leaves. But the apple produces, in addition, species of its own: there is the yellow larva of *Malella*, making long wavy galleries, and there is a yellow larva which makes blotches, and from which I am now half inclined to suspect we shall eventually rear *Trifurcula* *pulverosella*. Then, among Frey's new species, is one apple-feeder, *Desperatella*, of which the green larva makes closely-contorted galleries, often occurring in such numbers that the leaves appear entirely yellow; it occurs in October only on young bushes: another recently new species is *Minusculella*, of which the green larva mines, in August, the leaves of pear-trees (both wild and cultivated); the mine much resembles that of *Ignobilella*, the excrement, at first linear, being entirely black; the colour of the larva readily distinguishes it. The two last-named species have not yet been found here.

H. T. STAINTON.

Mountsfield, Lewisham,
August, 1856.

PROCEEDINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY.

July 7, 1856.—Special General Meeting.—W. WILSON SAUNDERS, Esq., President, in the chair.

The meeting was made special pursuant to notice for the election of a Secretary and one member of Council, in consequence of the resignations of Messrs. Douglas and Pascoe.

Mr. E. W. Janson was elected to both offices.

Dr. J. E. Gray moved a vote of thanks to Mr. Douglas, the retiring Secretary, whose able discharge of the duties, during the seven years he had filled the office, he was sure every one would acknowledge.

The motion was seconded by Mr. Westwood, and carried unanimously.

Ordinary General Meeting.—The minutes of the last meeting having been read and confirmed,

Mr. Douglas feared he was rather out of order in rising at that time to address the meeting; but the cause of his doing so was not an ordinary one. On the occasion of the Society's excursion to Reigate, on the 21st ult., the members had been most hospitably entertained by the President at the 'Swan' hotel. He much regretted that

business engagements had prevented him from being present; but had heard from more fortunate persons that they never spent a more pleasant day. He thought, therefore, the present was a fitting opportunity for proposing a vote of thanks to the President for his liberality on this and all other occasions.

Dr. Gray, as one of those present on the occasion alluded to, most cordially seconded this motion, which was submitted to the meeting by Mr. Douglas, and carried by acclamation.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—‘Die im Bernstein befindlichen organischen Reste der Vorwelt gesammelt in Verbindung mit Mehreren bearbeitet und herausgegeben von Dr. Georg Carl Berendt, Erster Band, Erste & Zweite Abtheilungen, Zweiter Band, Erste Abtheilung;’ presented by Madame Berendt. ‘Abhandlungen der Mathemat. Physikalischen Classe der Koeniglich Bayerischen Akademie der Wissenschaften,’ Vol. xvii. Part 3; ‘Dr. F. B. W. von Hermann, Ueber die Gliederung der Bevölkerung des Königreichs Bayern;’ ‘Denkrede auf die Akademiker Dr. Thaddäus Siber und Dr. Georg Simon Ohn;’ ‘Almanach der Königlich Bayerischen Akademie der Wissenschaften für das Jahr, 1855;’ presented by the Royal Bavarian Academy of Sciences. Hewitson’s ‘Exotic Butterflies,’ Part 19; by W. W. Saunders, Esq. ‘Journal of the Proceedings of the Linnean Society,’ No. 2; by the Society. ‘Jubilé Semi-Seculaire de la Société Imperiale des Naturalistes de Moscou le 28 Decembre, 1855;’ by the Society. ‘Généra des Coléoptères,’ Tome iii.; by the Author, M. Th. Lacordaire. ‘Revue et Magasin de Zoologie,’ 1856, No. 5; by the Editor, Monsieur F. E. Guérin-Méneville. The ‘Zoologist’ for July; by the Editor. The ‘Journal of the Society of Arts’ for June; by the Society. The ‘Literary Gazette’ for June; by the Editor. The ‘Athenæum’ for June; by the Editor. ‘A Catalogue of British Ichneumonidæ in the Collection of the British Museum,’ by Thomas Desvignes; by the Author. ‘A Manual of British Butterflies and Moths,’ No. 5; by the Author, H. T. Stainton, Esq. The ‘Entomologist’s Weekly Intelligencer,’ Nos. 10—14; by the Editor. ‘Entomologische Zeitung,’ 1856, Nos. 5 and 6; by the Entomological Society of Stettin. An engraving on steel of *Lithocolletis tenella*; by Edward Robinson, Esq.

Mr. Westwood read a translation of Madame Berendt’s letter accompanying the donation of her late husband’s ‘Organischen Reste in Bernstein,’ which stated that on the completion of the work it is her intention to dispose of the cabinet left by Dr. Berendt at his decease, in which the greater part of the original specimens figured and described in the work are contained. He observed that such a collection was extremely interesting, from the fact that while in very few instances fossil insects could be decyphered in all their parts so as satisfactorily to determine their structure and relations, these amber insects, being enclosed in a transparent substance, are quite visible and easily examined. Supposing the collection to have been formed from specimens of amber collected on the shores of the Baltic (the chief source of supply for this material), it would show that the climate of Prussia had undergone many changes; for it contained a great number of forms quite analogous or even identical with existing European groups, intermingled with others of a tropical character, and others, again, quite distinct, especially among the Neuroptera, where so many gaps in the natural series exist in the known forms. The volume published contained the plants, APTERA of Linnæus, HEMIPTERA and NEUROPTERA, the latter very carefully worked out

by Dr. Hagen; the Coleoptera, Lepidoptera, Hymenoptera and Diptera remaining to be treated upon in the fourth volume, now in course of publication. As the collection was eventually intended for sale, he trusted that it would be secured for the British Museum, and supposed it would be regarded as an appendage to the zoological rather than to the palaeontological collection.

Dr. Gray did not wish to detract from the merit of the elaborate work on the table, but considered great caution was necessary in the investigation of these organic remains in amber, as a large portion of the article sold for Baltic amber was in fact gum animé, and brought from Africa; and instanced many frauds practised by dealers in specimens on the Continent. He imagined there could be no doubt that a collection of this kind was a zoological one, and not palaeontological.

Election of a Member.

The Rev. G. W. Braikenridge, of Broomvill House, Brislington, near Bristol, was balloted for and elected a Member of the Society.

Exhibitions.

Mr. Douglas exhibited bred specimens of *Lamprosetia Verhuellella* and *Bucculatrix maritima*, from Mr. Hemmings, of Brighton; also specimens of *Laverna Raschkiella* and *L. conturbatella*, two species of *Tineæ*, hitherto unrecorded as British, both taken at Box Hill, by Mr. F. O. Standish.

Mr. Foxcroft sent for exhibition some Coleoptera taken in Perthshire, including a single example of *Dendrophagus crenatus*, *Puyk.*; and some living specimens of *Chrysomela cerealis* from Wales.

The President observed that *C. cerealis* appeared to be plentiful in Wales this season. Mr. Brewer had shown him a great number recently taken there.

Mr. Stevens exhibited a living specimen of *Lebia crux-minor*, taken by himself near Brighton; *Adgestes Bennettii*, bred from the larva described at the last meeting; and a pair of *Heterogenea Asellus*, lately taken in the New Forest.

Mr. Stevens also exhibited larvae of *Petasia nubeculosa* and *Notodontia Carmelita*, nearly full-fed, being the same as he exhibited at the last meeting, then a few days old; and a box of beautiful Lepidoptera, taken by Mr. Bates at Ega, containing *Papilio Bolivar* and some fine species of *Charaxes*, *Leptalis*, &c.

Mr. A. F. Sheppard exhibited *Gastropacha Ilicifolia* from Cannoch Chase, and specimens of *Laverna Raschkiella* and *L. conturbatella* from Box Hill.

Mr. Adam White exhibited a box of insects, of various orders, taken by Mr. Bowring at Hong-Kong, Siam, &c., including a new species of *Monohammus*, of a fine bluish green colour, with black spots, for which Mr. White proposed the name of *M. Bowringii*; also a new butterfly, of the singular genus *Cyrestis*, from Siam, and some curious spiders from Java, &c.

Mr. Bowring exhibited the larva of a Chinese Elater, and the pupa-cases of *Sagra femorata*, apparently formed of excrement. He made the following communication respecting the *Sagra* and the *Monohammus*:—

"The pupa-cases of *Sagra*, now exhibited, were discovered by Lieut.-Col. Dunlop, R.A., in the interior of the stem of a large climbing species of *Ipomæa*, which trails over a fine row of bamboos in the rear of Head-Quarters House. In clearing away the creeper he observed that the stem was considerably thickened in some places; and on cutting open the swellings the pupæ were found. The larva I have not yet met with;

but, being now acquainted with the habitat of the insect, I have little doubt of falling in with it on my return to China.

"The beautiful species of *Monohammus*, to which Mr. White has called the attention of the members present, is found upon a species of oak not uncommon in Hong-Kong; but the species is by no means of frequent occurrence. I first met with it in 1848, since which time, until the spring of the present year, I have found it only during one season. On each occasion the appearance of the insect was limited to a few days, and every specimen captured was taken on the oak already mentioned.

"During the summer of 1855 *Agestrata chinensis* appeared in considerable abundance in the Happy Valley, Hong-Kong, flying in the evening about the tops of some large mango trees, and, from its great size, having more the appearance of a bat than an insect. In the mornings I not unfrequently found the beetle hanging on the under side of the leaves of the mango."

Mr. Westwood wished the interior of the cocoons of the *Sagra femorata* to be examined, to see if they contained the cast skins of the larvæ, in order to ascertain if the insect was provided with legs in the larva state.

Mr. Wilkinson exhibited a bred specimen of *Opadia funebrana* and the pupa-case; also several living specimens of a species of *Pyrophorus*, probably *P. noctilucus*, *L.*, one of the fire-flies of the West Indies. On the meeting-room being rendered as dark as possible, the luminosity of these insects was observed with much interest by the members present. Mr. Wilkinson remarked that these specimens had been brought from Cuba *via* New York, but that their luminosity was not so great as on their first arrival in this country.

Mr. Baly exhibited specimens of eight species of *Cryptocephalus*, taken this season, including *C. nitens*, *C. Coryli*, and other rare species.

Mr. Westwood brought for distribution amongst the members the case-bearing larvæ of *Porrectaria hemerobiella* and *P. laricella*. The latter species had done so much damage to a plantation of young larches this season that the owner feared he should have to cut the trees down. He also exhibited some empty pupa-cases of a *Tortrix*, apparently a species of *Sericoris*, found in curled-up leaves of wheat.

Mr. Westwood also exhibited a specimen of the imago and two cocoons of a species of *Saturnia*, sent to the Society of Arts from California, where attempts were being made to render the silk of the cocoons an article of commerce. He observed that these cocoons were flask-shaped, like those of our British species, *S. Carpini*,—a matter of great importance in a commercial point of view, for, the threads being all divided at the orifice formed for the exit of the perfect insect, it would, he conceived, be quite impossible to unwind the silk; and he therefore feared the speculation would prove a failure. He added that in the classification of the *Saturniæ* the structure of the cocoons had received less attention than it seems to deserve.

Dr. Gray said that at the Paris Exhibition, last year, there were exhibited cocoons of many species of *Saturniæ*, with specimens of silk produced from them. It appeared the cocoons were in the first place perfectly flat, and then subjected to a spinning process.

Mr. Buxton sent for exhibition specimens of *Scopula decrepitalis*, taken by him, last month, in Ross-shire; also singular varieties of *Orthosia gothica*, from the same locality. In these specimens the conspicuous dark marks usually surrounding the stigmata in this species were quite obsolete.

Dr. Calvert exhibited larvæ of *Caradrina Cubicularis*, which species had been

described by Mr. Curtis in the 'Agricultural Journal' as injurious to wheat crops. He had found it very injurious to grasses, especially the *Festucæ*, although one species, *F. loliacea*, did not appear to be attacked by it.

Mr. Adam White observed it was a curious fact that the larvæ would not attack *F. loliacea*, as this grass was considered by eminent botanists as a mere variety, and not a distinct species.

Mr. Stainton read a paper entitled 'On the Recent Progress of Micro-Lepidopterology on the Continent.'

Society's 'Transactions.'

Part 1 of Vol. iv. n. s. of the 'Transactions,' was on the table.

August 4, 1856.—J. O. WESTWOOD, Esq., Vice-President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—'A Manual of British Butterflies and Moths,' No. 6; 'The Entomologist's Weekly Intelligencer,' Nos. 15, 16, 17 and 18; presented by H. T. Stainton, Esq. 'Genus Familiæ Apidarum Heriades, quod Synopsi Monographica exponit,' by the author, Dr. W. Nylander. 'Proceedings of the Royal Society,' Vol. viii. No. 21; by the Society. 'The Zoologist' for August; by the Editor. 'The Natural-History Review' for July; by the Editors. 'Revue et Magasin de Zoologie,' No. 6; by the Editor. 'Eine neue Oesterreichische Phryganea' and 'Eine neue mäbeische Nycteribia; by the Author, Dr. Kolenati. 'Journal of the Society of Arts' for July; by the Society. 'The Literary Gazette' for July; by the Editor. 'The Athenæum' for July; by the Editor. 'Report of the Committee on the "Cane-borer;"' by the Author, Prof. Bojer.

Election of a Subscriber.

John Sang, Esq., High Row, Darlington, was balloted for and elected a Subscriber to the Society.

Exhibitions.

Mr. Douglas exhibited, on behalf of Mr. Bold, a specimen of *Drepana Sicula*, taken at Leigh Wood, near Bristol, in June last: there had previously only been one known British specimen, taken in the same locality many years since by Mr. Mitford, and now in the collection of the Rev. H. Burney.

Mr. Hunter exhibited *Spilodes palealis* and *Trochilium Chrysidiiforme*, taken near Folkestone in July last; also a specimen of *Eriopus Latreillii*, a *Noctua* new to Britain, which he had recently bred from a larva believed to have been taken at Black Park, and specimens of the summer brood of *Ennomos illustraria*, bred from eggs laid by the vernal female.

Mr. Weir exhibited some specimens of *Macaria notataria*, in all of which the under wings were more or less imperfectly developed, to which malformation he had noticed

this species was particularly subject, especially this season; one specimen, in which the under wings were merely rudimentary, flew with as much apparent ease as those in which they were perfectly developed.

Mr. S. Stevens exhibited *Harpalyce Galiata*, in which one under wing was quite wanting. Mr. Bond observed that such malformation was not at all uncommon among the Geometridæ. Mr. Smith remarked that in the female of the common wasp the wings were frequently not developed at all.

Mr. Stevens exhibited two specimens of *Deilephila Galii*, bred from larvæ taken last autumn by Mr. Smith near Deal, and some Tortrices resembling female varieties of *Lozotænia Viburnana*, which he believed might prove a distinct species; also four specimens of *Trochilium Chrysidiforme* and a specimen of a new British species of Phycideæ, probably *Nyctegretes achatinella*, taken in July near Folkestone.

Mr. Waterhouse exhibited some specimens of *Myrmecodia*, which he had found in the vicinity of a nest of the black ant (*Formica fuliginosa*), at Brockenhurst, in the New Forest: they consisted of *Myrmecodia funesta*, *M. lugens*, *M. humeralis*, *M. cognata* (?), and *M. laticollis*. Of these all the species furnished but few specimens, excepting the *M. laticollis*, which was plentiful. Mr. W. further stated that of these species three (*M. cognata*, *M. laticollis* and *M. lugens*), he believed, had not found a place in the list of British Coleoptera, but that the *M. cognata* had been previously discovered by Mr. Janson. One other new British species of Staphylinidæ was exhibited by Mr. W., viz. the *Oxypoda vittata*: it was found in company with the species of *Myrmecodia* above noticed.

Mr. Tompkins exhibited a specimen of the *Nyctegretes*? previously exhibited by Mr. Stevens, which he had taken at the same time and place, on the *Echium vulgare*.

Mr. Bond exhibited six beautiful specimens of *Graphiphora ditrapezium*, taken near Blandford, Dorsetshire, about the middle of July.

Mr. Wollaston exhibited some Coleoptera recently taken in Leicestershire, including a single specimen of *Scaptia fusca*.

Poison with Laurel Leaves.

Under this title, the Secretary read the following note from Mr. Newman:—

“ I have two favourite theories with regard to insect-killing: *first*, that man, not being constructed on the same plan as an insect, has very little chance of judging correctly as to the extent or quality of its sufferings under any circumstances: *secondly*, that man has no right whatever to inflict unnecessary suffering on any creature, and may not assume that sensation exists not because he perceives it not. Entertaining these views, I have watched with much interest the effects of laurel-leaf poison on divers insects subjected to its agency: these are very similar in all insects; a state of coma is speedily induced, and this gradually assumes the phase of peaceful unsuffering death. I will try to pourtray the scene in the instance of a perfectly vigorous female of *Arge Galathaea*. Immediately on being placed beneath the inverted tumbler, it settled on the gauze covering of the bruised laurel-leaves, and walked about very sedately, occasionally opening and shutting its wings, as if under the influence of genial sunshine. It soon ceased walking, but the wings still moved occasionally; and the convolute maxillæ were unrolled, and their tip seemed to be feeling about in search of food: presently the said tip was immersed in a drop of fluid exuding from a

recent wound in the laurel stem; a very small quantity was imbibed, and more was sought very assiduously, but seemingly without success. I once observed the first pair of legs protracted, and being held close together, the maxillæ were introduced between them and withdrawn several times in succession: this was very new to me, as I do not recollect having before seen the fore-legs of a pseudo-tetrapod butterfly used for any purpose whatever: in this case they appeared as cleansing instruments, and reminded me a little of the velvet-cushioned paws of a cat, as used after her lips had been sprinkled with milk, a constant result of lapping that favourite beverage. A state of rest succeeded this cleansing, during which the butterfly inclined on one side, as though unable to maintain an erect position; and the angle of inclination increased very gradually, until in about an hour and a half the insect fell on its side; the slight shock of the fall was followed by a few gentle movements, the most notable of these being the reversal of the wings, the under sides of which were brought into approximation, not contact, beneath the body; the legs being, by the same movement, quite deprived of their *locus standi*. Life was extinct, and from first to last there had not been the slightest indication of suffering. I do not theorise as to the immediate cause of death: I do not assert that, because the insect sipped the laurel-juice, it committed either intentionally or unintentionally an act of *felo-de-se*: the very atmosphere of a tumbler inverted on bruised laurel is impregnated with deadly poison in a gaseous state, and this enters the system through the spiracles as readily as a liquid through the conjoined maxillæ."

Mr. Smith always found the bruised laurel-leaves killed Hymenoptera very speedily. He could not agree with Mr. Newman, that, in the case of the butterfly alluded to, the process which took an hour and a half to destroy life was not attended with suffering.

Mr. Douglas said that a short time since he had placed a number of Coleoptera, amongst which was a specimen of *Necrobia ruficollis*, in a bottle containing bruised laurel-leaves: after a lapse of several days he had found the *Necrobia* still alive.

Mr. Weir remarked that *Eupisteria hepararia* seemed less affected by the laurel poison than any other Lepidoptera he had observed.

Mr. Hudson found the fumes of the bruised laurel-leaves very powerful for the first day or two, but the strength was gradually lost.

Mr. Walker had found the laurel-leaves much more powerful in hot than in cold weather.

Mr. Douglas remarked on the immense numbers of small insects, especially Coleoptera, lately seen on the wing at sunset, which he attributed to the great heat and stillness of the atmosphere.

Mr. Stevens had noticed this circumstance in previous years during very hot and dry weather.

Mr. Westwood called attention to Dr. Schaum's continuation of the late Dr. Erichson's 'Naturgeschichte Deutschlands,' which had just been placed in his hands by Mr. Wollaston, and adverted to the fact that the Cicindelidæ had in it again been raised to the rank of a family.—*E. S.*

Notice of the Occurrence in Cornwall of that rare Zoophyte, Retepora reticulata.—As you always think it desirable to notice the occurrence of any of the rarer objects of Natural History in the pages of the 'Zoologist,' I send for insertion a description of a specimen of *Retepora reticulata*, which I recently procured from deep water off the Scilly Islands. I can speak with certainty as to its great rarity in Cornish waters; and, judging from the very brief and imperfect description of it given by Johnston in his 'British Zoophytes,' I conclude it is equally rare in other parts of the kingdom, or that it but rarely falls to the lot of a naturalist to examine. It was first noticed as British by Borlase, and he has figured it in his 'Natural History of Cornwall'; by him it was communicated to Ellis, who published a figure and short description in his 'Essay on Corallines,' about three years before Borlase. Since that time I believe no other Cornish specimen has been obtained till now. My specimen was hooked up in fifty fathoms water, growing to a boulder of rounded slate, in company with *Tubulipora patina* and *T. serpens*. It is about three-quarters of an inch in height and width, and about one inch in its longest diameter. It is calcareous, white, foliaceous, shortly pedunculated and funnel-shaped; the polypidom is pierced with numerous oval openings quincuncially arranged, having their longest diameter in the axis of growth. The cells are confined to the upper surface only. It is a very light and very pretty species, and in its dead state is of a pure white colour. The peduncle is rather small, and is attached by a slightly spreading base. As it rises from the base it immediately spreads out into its waved foliaceous expansions, assuming a funnel-shaped form, with the free margin very unequal and much convoluted. The oval openings, which everywhere perforate the polypidom, are produced as the natural result of the peculiarities which characterize the mode of branching. As the calcareous parts ascend from the peduncle, the branches, which are short, arise in pairs and diverge from each other. This diverging brings two neighbouring branches into contact, and they then unite, leaving an open oval space between. The cells, which are confined exclusively to the upper surface, are long, tubular and immersed throughout their whole extent, except near the oral apertures, where they are more or less free and semi-erect. The apertures of the cells are round and armed with one or two stout spines, which give the surface of the coral, when viewed laterally, a rough appearance. The cells are arranged on the branches either quincuncially or in twos and threes in oblique lines across. The under-surface of the polypidom is plain, being marked only by lines which indicate the course of the cells above. The specimen examined so closely resembles the figure given by Borlase that no doubt can be entertained but that both must be referred to the same species; but I am inclined to think a little confusion exists in authors respecting this and a kindred species, which perhaps it may be difficult to remove on the evidence of a single specimen, though I have had an opportunity of comparing it with *R. Beaniana*, which it most resembles. The synonyms which appear to belong to this species, so far as I have yet examined, are—

Retepora eschara marina. Ellis' Coral. p. 72, pl. xxv. fig. d, D.

Millepora retepora. Borlase, Nat. Hist. Corn. p. 240, pl. xxiv. fig. viii.

„ *reticulata.* Lin. Syst. Nat. 1284; Ellis and Soland. Zoop. p. 138.

Retepora reticulata. Flem. Brit. An.; Stark's Elem. vol. ii. p. 435; Stewart's Elem.; Couch's Fauna, p. 130, pt. 3; Johnst. Brit. Zoop. p. 353.

Dr. Johnston has quoted, at p. 353 of his valuable work on 'British Zoophytes,' Mr. King's remarks on *R. Beaniana*, in which he says, "In the Mediterranean coral

the interstices of the celliferous surface are furnished with strong hook-shaped processes curving upwards, generally two on each side of a mesh;" and he adds, "nothing of the kind is seen in the British species." This last is, however, a mistake, as the hooks are to be found on the side of almost every mesh in my specimen; but the hooks are nothing but the labial spines of the cells, which are thrown into distinct relief by the branches rounding off towards the oval interspaces. The spinous character of the mouth does not arise, as in *Discopora hispida*, from the unequal growth of the cell, but constitutes a distinct appendage, for the polypidom does not increase in thickness with age, as in some of the *Tubuliporidæ*, but simply enlarges in its flat surface. In this respect its mode of growth resembles the encrusting *Flustras*.—*R. Q. Couch; Penzance.*

Occurrence of the Rosy Feather-star (Cainatula rosacea) and the Dotted Brittle-star (Ophiocoma punctata) at Banff.—I had heard a little, and had seen a plate or two, of the remarkable star-fish, the rosy feather-star, and had also seen something like it, if not the same, in stone; but it was not until a few days ago that I had the pleasure of beholding, for the first time, the real *bona fide* animal itself. What a pretty creature! but how brittle! O how beautiful! Does any one wonder, as I used to do, when he hears of a stone-lily or of a lily-star, as applied to this genus? Then let him get a sight of a crenard-star, and sure am I that his surprise will give place to admiration: and how curious! said to have been once the "most numerous of the ocean's inhabitants," and now only about a dozen kinds are to be found alive, and only one in the British seas, and that but rarely met with. Well, I am proud to be able to record its occurrence on the Banffshire coast. The specimen alluded to was taken from the stomach of a cod-fish (*Morrhua vulgaris*). I would beg also to mention the occurrence here of the dotted brittle-star: this is likewise a rare species with us; I have only as yet met with three, and that but lately, two from the stomach of a cod, and one from that of a haddock (*Morrhua æglefinus*).—*Thomas Edward; Banff, August 8, 1856.*

Instance of a Honey Buzzard feeding on Blackbirds' Eggs.—Mr. Thurtell, bird-stuffer, of this town, informs me that he found the remains of blackbirds' eggs in the crop and stomach of a honey buzzard which he stuffed in the spring of 1854, and which was shot in a wood at Somerleyton, near this place. The circumstance being authentic is perhaps worth recording in the 'Zoologist.'—*J. H. Gurney; Lowestoft, August 16, 1856.*

Extraordinary Effect of Sudden Cold on Swifts.—On Tuesday, the 8th of July, I was at Deal: the early part of the day was warm, but a continued drizzling rain fell; this, however, did not prevent swallows and swifts from hunting after their prey much as usual: towards evening a sudden atmospheric change took place, the thermometer fell rapidly; it became so cold that an overcoat was not uncomfortable. Sitting at the window, and amusing myself by watching the swifts, which were very numerous, I was struck by observing that their flight was unsteady; they fluttered up against the walls of houses, and I saw several even fly into open windows. Whilst observing these occurrences a girl came to the door to ask me if I wanted to buy a

bat: she had heard, she told me, that I bought all kinds of bugs, and her mother thought I might want a bat. On her producing it, I was astonished to find it was a poor benumbed swift. The girl told me they were dropping down in the streets, and the boys were killing all the bats; the church, she said, was covered with them. Off I started to witness this strange sight and slaughter. True enough; the children were charging them everywhere, and on arriving at the church in Lower Street I was astonished to see the poor birds hanging in clusters from the eaves and cornices; some clusters were at least two feet in length, and at intervals benumbed individuals dropped from the outside of the clusters. Many hundreds of the poor birds fell victims to the ruthless ignorance of the children.—*Frederick Smith; British Museum, August 16, 1856.*

Particulars of some of the Habits of the Dipper (Cinclus aquaticus).—As the dipper, or water-thrush, is commonly found to confine itself to solitary places, far from the busy hum of men, it is not easy to imagine a reason why it should at any time so far forget its accustomed shyness as to take up its residence and rear its brood very close to, and almost in the midst of, a rather considerable cluster of houses, the residence of about a thousand inhabitants. Such a circumstance, however, has happened; and has afforded me the opportunity of recording the following notes of the proceedings of a pair of these birds under such novel circumstances. For a year or two before the date to which I particularly refer, these birds were observed to be frequently at lower stations than usual on our small but rapid trout stream, that runs through the town; and in each instance they reared their young in safety. After this I received information that a nest had been formed on the bank of the river, in a situation where I should least have supposed, and I proceeded to examine it. I found it on a large stone overhanging the only depth into which, for a long distance, the birds could plunge immediately from the nest and be covered with the water. It was formed of moss, but the bottom was the bare stone; and much skill had been employed to remove suspicion, by causing the straggling brambles to grow over it, and even by scattering, and interweaving with the structure, some dead pieces of the stems of the bramble. The young had escaped, and in doing so had been observed to shuffle themselves over the border of the stone into the water below, into which they sunk as they scrambled away from sight. It appears surprising how these birds could have come to this nest at any time without being discovered by boys, who swarm in the neighbourhood, and whose prying eyes might have been supposed to have soon traced out their retreat, however well concealed by overhanging bushes. To approach the nest, perhaps indeed, sufficient vigilance might be employed, by watching the occasion when these boys were engaged elsewhere; but to quit the place unobserved must have been attended with considerable difficulty. My informant was aware of this, and kept watch accordingly, and as he is one of those persons, so often found in the country and so useful to a naturalist, who is fond of observing Nature, with a true eye to discern circumstances, I have no hesitation in adopting his narrative, to secure the accuracy of which no time or attention was thought too much. When the bird left its station, instead of flying along the brook, it was observed to rise perpendicularly to almost the height of the hills close by, and consequently to the elevation of about three hundred feet, and from thence it either flew away at an angle or descended in a sloping flight to some other part of the Coomb. Its entrance to the nest was probably secured in a different manner; but it is scarcely possible to think of a measure better calculated than the former to effect

the object without attracting observation. The observer informs me that, early one morning in August, his attention was excited by one of the birds, as it was engaged in catching young eels that, as is usual, were ascending the stream. One of its wings was stretched out in the flowing of the river, so as, in some degree, to form a breakwater in the shallow. An eddy was thus created, and when an eel swam forward to the slack water, the bird immediately seized and swallowed it. This action was observed on several occasions in different parts of the stream, the wing being extended against the course of the current in every case. It has been remarked that the dipper and the kingfisher do not keep in the same streams, but which it is that drives the other away seems uncertain.—*Jonathan Couch; Polperro.*

Occurrence of the Rosecoloured Pastor at York.—I beg to inform you that a fine specimen of the rosecoloured pastor (*Pastor roseus*) was shot in a garden here on the 4th of this month, and is now in my possession: it is a female. The male has been seen several times, but I am sorry to say it is so wary that there is no coming within shot. I have also received a very fine old male bird of Montagu's harrier (*Falco cineraceus*), shot at or near Brompton, Northallerton, on the 14th instant.—*Daniel Graham; Market Street, York, August 16, 1856.*

The House Sparrow a Flycatcher.—July 31, 1856. A sultry day, with no air stirring, the thermometer at 6 P.M. up to 72°; just the sort of weather in which gnats and flies delight to sport, and the air seemed alive with small black flies, to which my attention was directed by observing some house sparrows hawking them, flying up some twenty or thirty feet, then soaring and balancing themselves with extended wings while seizing the insects, which they did seemingly as readily and expertly as the true flycatchers. After catching their prey they would suddenly drop to the ground, or fly on to the neighbouring roof or trees. One I observed proceed to feed its young, doubtless with one of the captured flies. Although I have occasionally seen sparrows take butterflies and other insects on the wing, I never before, that I am aware of, observed them regularly hawking flies after the manner of the flycatchers. I have for some years noticed the great partiality of the house sparrow for the leaf of the sea-purslane.—*Henry W. Hadfield; High Cliff, Ventnor, Isle of Wight, August 2, 1856.*

Gray Longbeak (*Macrorhamphus griseus*).—Extract from note-book:—“Isle of Man, 1847. When snipe-shooting in a marsh near the Point of Air, a bird suddenly rose before me, which I at first supposed to be a snipe, but, owing to its more rapid as well as peculiar flight, soon discovered my mistake. I fired, but it was out of shot almost before I could raise my gun to my shoulder. I again flushed it with no better success, but, having been careful in marking it down, proceeded to stalk it, taking advantage of any cover or inequality in the ground, with my gun ready to be brought to the shoulder, a finger on the trigger; so when sprung the *third time* I was fortunate enough to shoot it, but on picking it up saw at once that it was not a snipe. Although an old hand at snipe-shooting (having, in less than two seasons, killed eight hundred snipes out of this and the neighbouring marshes), I almost despaired of being able to bag it, from its great shyness as well as rapidity of flight. I consulted an old work on Ornithology, without finding it, but subsequently, on referring to Macgillivray's ‘Manual,’ met with a faithful description of it in the gray longbeak.—*Id.*

Occurrence of the Avocet near Newark.—An avocet was shot at Fisherton, on

the river Trent, near Newark, Notts, on the 23rd of July, 1856. As it is a young bird of this year, the interscapulars being brown instead of white, and the bill short, I should think it likely to have been bred in England.—*W. F. Footit; Newark.*

Note on 'Manual of British Butterflies and Moths.'—There are two statements made in the August number of the 'Manual of British Butterflies,' one of which I am anxious to correct, and the other to modify. In reference to *Lithosia griseola*, it is said, "Larva unknown." This is quite an erroneous dictum: I have been in the habit of breeding it for some years past; I bred it at Halton, and in my present locality, during the spring, I found the larvæ by dozens: it bears a strong resemblance to that of the common *complanula*, but I will not attempt to give an accurate description of it, as, supposing it well known, I did not pay much attention to it. Like the majority of the species in this genus, it is a lichen-feeder, but it will not refuse leaves, as I have reared it from plantain, and Mr. Crewe told me he had bred it, I think, from beech. Secondly, of *Clostera curtula*, it is said, "This appears to have become a scarce insect." I am far from denying a statement in general which I can only disprove in particular, but I have long entertained an opinion similar to that expressed by, I think, Mr. Hodgkinson, in a former volume of the 'Zoologist,' that many insects esteemed rare are only so through ignorance of their habits and a want of steady and assiduous searching; but, as regards *C. curtula*, last autumn I took, or rather might have taken, the larvæ in profusion: ignorant of the circumstance that the insect was a *desideratum*, I secured only eighteen, from which I bred ten fine specimens. I trust I shall not be deemed presumptuous if I add that I think the scarcity of the insect may be owing, in part at least, to ignorance of the proper way of searching for the larva: many larvæ, as is well known, spin themselves up securely in a leaf, or between leaves, during the day-time, and come out to feed at night, as the different species of *Ceropacha*, *Tethea*, &c.; now it is almost, if not entirely, useless to *beat* for these; they can only be found by examining the leaves. Both *C. curtula* and *C. reclusa* spin up in this way: the right method, therefore, as it appears to me, to search for the larvæ, is carefully to examine the poplar shrubs and shoots which may be growing in open places or borders of woods; open every leaf which may be glued together, or, if two leaves be joined, disconnect them, and though many will be found empty or tenanted perhaps only by earwigs, yet, if the insect occur in the locality, it will be astonishing how much success will attend a few hours' careful search. Mr. Crewe is the best "hand" I know of at this kind of work, and to him I am indebted for much valuable information on the subject. I took the two species together, *C. reclusa* being the most abundant. Before I conclude, may I ask, Has not some error occurred in the same number of the 'Manual,' respecting *chrysorrhœa* and *auriflua*? The former I have been in the habit of supposing was the common *gold-tailed* moth, the latter the much more uncommon *brown-tail*, occurring principally on the coast.—*J. Greene; Playford, Ipswich, August 9, 1856.*

Reply to Mr. Gregson's Observations at p. 5210 of the 'Zoologist.'—I hope some one more competent than myself will reply to Mr. Gregson's paper in last month's 'Zoologist,' but should not like it to be supposed that he represents all Lancashire,

and, as I see my name mentioned, beg to say that I do not at all agree with him in the idea that Lancashire *entomologists* have done anything to entitle them to "brag" over others: we certainly work under some disadvantages, having neither a good library of reference nor an extensive general collection to refer to, and much time is lost in finding out what is already known, but he appears to have overlooked one or two considerations which would have reduced his claim considerably. The North of England was, a generation ago, almost unexplored for insects, and therefore sure to furnish novelties, and the finding of them does not necessarily imply extraordinary talents: Lancashire and the neighbouring counties contain, I imagine, more men who collect for sale than most other places, and as the great majority of these men care only to know how to get specimens, and what they will fetch in the market, they only merit the same praise as any other industrious producers of saleable articles; local insects are certainly "made common" by them in collections for a year or two, and scarce for a long time afterwards; but there is no scientific credit due for their discoveries: what merit there is at all in being accidentally the first to find a "new" insect I do not know. It appears to me also that, in some cases, Mr Gregson's zeal has led him to make over-statements, where other collectors have discovered the species, and his clients have followed them up and made them common, but, as I am away from books, if I particularise from memory, I shall perhaps only display my own ignorance. I should, however, like to know when *Daplidice*, *Fraxini* and some others were "doubted as British;" certainly not when the specimens he mentions were taken, for *Daplidice* was taken and bred at Dover many years ago, and my friend Edleston has had for many years a specimen of *Fraxini*, which was taken near Manchester, and both events are mentioned in the 'Entomologist' or early numbers of the 'Zoologist,' to which he refers; particular specimens were and are doubtful, especially sea-port ones, but not the species. If such papers as this, by exciting emulation, tend to advance the science, it is well; but if not, they can only gratify a petty vanity and excite ill feeling, and ought to be suppressed: let us all work as hard as we can in discovering the unknown in Entomology, and there is work for a hundred lives, and no necessity for jealousy from want of room, and any extraordinary talent or assiduity is sure eventually to be appreciated. I do not know why Mr. Stainton makes Lancashire collectors the chief whetstone for his wit: the last time he used us he compared us to Yankees, but quite misstated the character of our cousins, though they *do* talk they certainly do a considerable amount of work, and if the comparison be just, it is not uncomplimentary. Mr. Stainton continually ridicules collectors generally, because they do not know all that Continental entomologists have done, and do not find at once in Britain all the insects which may occur here, and especially those of which the habits are known abroad; he forgets that few entomologists are rich enough to possess a foreign library, and that most of us are too far away to avail ourselves of his liberality on a Wednesday evening; but, for all that I can hear or see, it is just as much a matter of luck with those who have these advantages as with us who have them not: example is proverbially better than precept, and a few insects found by mere force of *will* to do so, will be a better stimulant and rebuke to men of little determination than a whole 'Intelligencer' full taunts and sarcasms.—*John S. Ashworth; Llangollen, August 15, 1856.*

Colias Edusa.—A single example, the first I have heard of this year, was noticed flying near Ryde on the 31st of July, a somewhat earlier date than usual for its appearance with us.—*A. G. More; Bembridge, Isle of Wight, August 15, 1856.*

Capture of Deilephila Galii in Sussex.—It may perhaps interest some of the readers of the 'Zoologist' to hear that on the 6th of this month I took a specimen of the "scarce-spotted hawk-moth" of Westwood's 'British Moths,' vol. i. p. 18. My attention was attracted by the loud humming caused by its wings, for it was too dark to see the insect; but I could just see that a flower of the Verbena was shaking, and swept it into my net. This was at half-past eight P.M. It was very violent, but succumbed instantly to a small piece of cyanide of potassa in a drop of vinegar. I add this, as it may be a useful hint to some of your collecting readers. I do not claim the discovery of the use of cyanide of potassa for destroying insects, the credit belonging to my friend G. B. Buckton, Esq.—*Wm. Borrer, Jun.; Cowfold, Sussex, August 11, 1856.*

On the Use of the Anal Fork in the Larva of the Puss-moth (Cerura vinula).—I have two caterpillars of the puss-moth, which have just passed through their last moult. One of these had moulted about ten hours, and had just begun to eat after the change, when I went into the room with a candle (as it was night) to look at him. I must premise that they were kept in a large, wide-mouthed glass jar, with a cover laid loosely on the top. The one I speak of had mounted on the edge of a large poplar leaf, and was so close to the top that in lifting off the cover I slightly touched his head. I was not looking at his tail at the moment; but, an instant after, I saw projecting from the extremity of each branch of this forked organ a crimson filament, as fine as a hair, but flexible and bent downward. When I first saw these filaments they were projected about one-sixth of an inch from the tail-tips, and were in process of being retracted into them, which in a few seconds was quite effected, no trace of their presence remaining visible, except that the extremities of the sheaths, when examined with a lens, were truncate and evidently perforate. It seemed as if the process was one of direct and simple withdrawal of the thread, and not of involution; but, from the tenuity of the filaments, I cannot be quite certain of this. The analogy of the organ, and of its mode of use, with the Y-shaped, orange-coloured, protrusile fork in the neck of caterpillars of the genus *Papilio* struck me at once. The throwing upward of the tail, as if to repel the affront, was exactly like what I have seen *Papilio* larvæ do with the head at the moment of extruding the fork. In the latter case, however, the organ is distinctly everted and inverted. I tried several times afterward to induce the puss to show fight again, coming suddenly upon him after intervals, and insulting him in various ways; but no: he remained obdurate.—*P. H. Gosse; August, 1856.*

Postscript.—I have since found that by tapping the glass jar with my finger-tips, or by taking out the leaf on which the caterpillar rests, in that uncouth fashion that was once upon a time considered lion-like, and laying it carelessly on a table, I can make him protrude his threads at pleasure. Sometimes only one filament appears, but much more commonly their motions are concurrent. The crimson filament, of about the thickness of a horse-hair, is shot forth rather suddenly, to the length of about three-eighths of an inch, from the tip of each of the tapering and muricated anal processes. These are usually at the same moment thrown apart, and also jerked over the back towards the head. The filament bends downward as it protrudes; and when it has attained its utmost extension it begins instantly to be withdrawn, often curling up in an irregular spiral as it disappears. When watched with a lens the process is seen evidently to be one of eversion (for extension) and involution (for withdrawal); the most basal portion (about a line in length) is of a greenish white hue,

and this is the first part to appear and the last to disappear; while as the lips of the extreme tip are seen to be, as it were, *sucked in*, just like the finger of a glove being turned, we discern the crimson colour of the inverted filament (through the semi-transparency of the integuments) pass in succession down this whitish portion, and then down the anal process, communicating (when finally at rest) a ruddy flush to the dorsal side of this organ, which, but for the contained filament, would be of a pale green studded with shining black spots. When the filament was extruded I touched it with my finger, to try if any odour was given off from it, but none at all was perceptible, either in the air or on my finger. The result would have been affirmation in both cases, if it had been a *Papilio* larva.—*P. H. G.*

Correction of an Error.—I have been from home two or three weeks. On looking over the 'Zoologist' to-day, I find an awful blunder: page 5206, line 19, "males" ought to be "females." Please correct this in your next number.—*R. S. Edleston.*

Notodonta camelina double-brooded.—There is an old proverb, "Look twice before you leap, and perhaps I had better think twice before calling in question the authority of such men as Mr. H. Doubleday and Mr. E. Shepherd; but the best of men are sometimes mistaken, and I think they are. At page 5165 of the 'Zoologist' I find both of them saying that the *Notodontæ* are not double-brooded; and Mr. Shepherd says, speaking of *N. ziczac*, *N. dromedarius*, *N. dictæa* and *N. dietæoides*, "I beg most distinctly to deny that they are double-brooded." Now *M. dictæa*, *I beg most distinctly to assert*, is double-brooded. With respect to the other three, I have not sufficiently observed their habits to say one way or the other; but, knowing a little of *N. dictæa*, I feel confident that what I say is correct, and in which opinion I feel assured I shall be backed by nearly, if not all, the Bristol collectors. We regularly look for the insect in May and the last week in July: at both times we take them in some plenty large and perfect; between those times we never take them. Now I wish to ask these gentlemen, How is it that, if *N. dictæa* be not double-brooded, we find them appear at *two* regularly stated times, and never *between* those times, if they are, as they say, uncertain in their appearance? Facts are stubborn things.—*Arthur Naish; Brooklyn Lodge, Ashley Hill, Bristol, August 11, 1856.*

Alteration of the name of Callimome flavipes: occurrence of Deiopeia pulchella in Exeter, &c.—Not being aware that the specific name of the new species of *Callimome* described by me in the 'Zoologist' (Zool. 5074), had been previously used for a species in the same genus, I therefore propose for it a new specific name, that is *Callimome Devoniensis*, from the circumstance of the insect being first discovered in Devonshire. I went out the other day for an insect-hunt: the day was very fine, but an easterly wind was rather against us, which betimes blew rather cold; and now, as the entomological season is tolerably well advanced, I thought of obtaining something worth having. We rambled along by the side of the Creedy, a small river which empties itself into the Exe some little distance above Exeter: on its flowery and weedy banks I had thought to obtain a tolerably rich harvest, but was very much disappointed. *Cionus Serophulariæ* was abundant in some plants of *Serophularia aquatica*; we also obtained three species of *Douacia* on the leaves of the *Iris Pseudacorus*; but the best or rarest insect I saw for the day was *Deiopeia pulchella*, a single specimen, which I brushed out of the herbage by the side of the Crediton Railway, about half way between Crediton and Exeter, but by some unlucky aim I missed the mark, and lost it: this piece of misfortune unnerved me for the rest of the day, and I got nothing else worth mentioning, except a single specimen of *Lithosia rubricollis*.

I took two or three specimens of *Eucera longicornis*, which were almost the only bees I saw. On some old mossy rails I found one larva of *Coleophora paripennella*, and on a sallow-leaf I met with a single larva of *Coleophora palliatella* sticking up in the upper part of the leaf in the midrib; after finding this one specimen I carefully hunted the bush over, but could not find another; this I was very sorry for, as it is a species that is much wanted: thus ended my entomological ramble, which you will say was a very poor one for a day in June in Devonshire.—*Edward Parfitt*; 4, *Weirfield Place, St. Leonard's, Exeter*, June, 1856.

Note on the Occurrence of Scraptia nigricans.—I was fortunate enough to secure a specimen of this rare beetle a few weeks ago, near Kettering, in Northamptonshire, crawling on the inner surface of an open window, into which it had clearly flown from a garden immediately in front. The single example which had hitherto come beneath my notice was possessed by the late Mr. Stephens, and its history is, in the 'Illustrations of British Entomology,' thus briefly expressed:—"The only specimen I have seen of this insect I captured flying in a garden at Ripley, in July, 1827, about six o'clock in the afternoon." So much for *S. nigricans* the first. Its recent counterpart might be recorded as follows:—"The only specimen (save the Stephensian one) which I have seen of this insect I captured, flown out of a garden, at Rushton, in July, 1856, about six o'clock in the afternoon." An hereditary obedience to time and circumstances is strongly shadowed forth in many a representative of the "Carab race;" but the parallelism of these two instances is certainly very remarkable.—*T. Vernon Wollaston*; 10, *Hereford Street, Park Lane*, August 7, 1856.

Great Gathering of Phædon Vitellinæ.—On Wednesday, the 13th, at 6.30 P.M., the hour of Mr. Stanton's levée at the finger-post, I was wending my way quietly along a tributary lane in company with Mr. Douglas and some minor luminaries in entomological science, when I espied a twig of aspen, the leaves of which were so loaded with *Phædon Vitellinæ* as to give it a most abnormal brilliancy. One tap of the beating-stick produced a shower of these living gems: the net was quickly studded with them; no less than four hundred and eighty were bottled, and I believe full as many were turned adrift. Mr. Douglas and I have often thrashed the same hedges, in the same lane, at the same time, and with the same weapons, and I cannot recollect having seen a single *Phædon* previously taken there. This occasional abundance of a species in localities where it has not been observed before is a fact familiar to all experts in our craft; and many a record of such occurrences might be preserved with far greater advantage to science than those apocryphal statements about Bath Whites, &c., to which we are occasionally treated.—*Edward Newman*.—[*Intelligencer*.]

Corrections of Errors in Communication to 'Zoologist,' page 5210.—Page 5211, 16 lines from top, for "complanula" read "complana"; 20 lines from top, for "Semaphora" read "Cerura"; 12 lines from bottom, put a full-point after the word "had" and a capital F to "sound." Page 5212, 12 lines from top, erase "New to Science"; 24 lines from top, for "ocellata" read "occulta"; 3 lines from bottom, for "my" read "any." Page 5213, 16 lines from bottom, after "rare" should read "have been taken," &c.; 12 lines from bottom, after "mixtana" say "and;" bottom line, erase "Heliothis dipsacea."—*C. S. Gregson*; *Stanley, near Liverpool*, August 7, 1856.

[Great pains were taken both by my friend Mr. Douglas and myself to correct Mr. Gregson's contribution, but we both were fearful that some errors escaped us.—*E. N.*]

NOTICES OF NEW BOOKS.

‘Second Supplement to the History of British Birds; being also a first Supplement to the Second Edition.’ By WILLIAM YARRELL, V.P.L.S., F.L.S. 71 pp., 8vo. 18 Wood Engravings. London: Van Voorst. Price 2s. 6d.

BUT a few weeks, it seems scarcely more than days, have elapsed since I received this his last work from its gifted author. He was then in health and spirits, and in the full possession of his mental activity and acuteness; and now the grave has closed over him, and one of the most upright, well-informed, kind-hearted and industrious of men has taken a last long leave of the scenes which he loved so well, and of which he was so distinguished an ornament. He died as he lived. His last act was to leave his home in order to accompany an invalid friend to Yarmouth. The voyage was accomplished in safety, and Mr. Yarrell retired to bed full of life and apparent happiness: he had not long lain down when he felt a difficulty in breathing: he thought the hand of death was upon him: he rang the bell, and calmly indicated to the person who answered the summons his belief that his end was near. A medical man was speedily in attendance,—attendance, alas! unavailing; for the spirit of our great British naturalist was passing in peace from this world to the next. It is not my province to give any sketch of the history of such a man: that duty is in abler hands; and, moreover, his real history is to be found in the ‘British Birds’ and ‘British Fishes,’—works which from the moment of their appearance stood at the head of their respective subjects. His age was 72, and his vigour and usefulness were unimpaired to the last.

His remains were buried in the churchyard at Bayford, and the following brief inscription will be placed on his tomb. The unostentatious quotation from Wordsworth was his own selecting, when on a visit to a relation at Dover, in 1854:—

BENEATH LIE THE REMAINS OF
WILLIAM YARRELL,

BORN JUNE III. M.DCC.LXXXIV. DIED SEPT. I. M.DCCC.LVI.

HE WAS THE LAST SURVIVOR OF TWELVE BROTHERS AND SISTERS, WHO, WITH THEIR FATHER AND MOTHER, ARE ALL PLACED CLOSE TO THIS SPOT.

“First and last,
The earliest summoned and the longest spared,
Are here deposited.”—WORDSWORTH.

There was one trait in the character of Mr. Yarrell that must not be passed over in silence,—a trait with which no one was better acquainted than myself,—and that was his extreme readiness to afford information. Often have I had occasion to appeal to him in difficulties about specific character or points of economy; and from the very moment of mentioning the doubt, or the object of inquiry, his whole attention was absorbed by it; books, specimens, memory, every auxiliary was at his finger-ends; and no sacrifice of time or trouble was too great for him to make; neither was the subject ever left undecided while diligence or disposition to teach could throw on it a single ray of light. No other subject seemed to occur to him during the investigation; he had no other occupation: that one inquiry was, for the time being, the object of his life. His power of concentrating his attention on a single subject was most extraordinary; and more extraordinary still was the facility with which that concentrated attention was turned to *any* subject: he used it after the fashion of a burning-glass, casting the focus wherever he pleased. This faculty was at the service of all; and the attention of which I speak thus gratefully, from personal experience, was given to every truth-seeking inquirer. All honour be to the memory of such a man.

Simultaneously with this Supplement was published the third edition of the 'History of British Birds'; and there is every reason to rejoice that the latest observations of this great natural historian are thus preserved to us, and have received the finishing touch from his own hands. My readers will, I am sure, agree with me that this is no time for critical remarks on a work the title of which I have used to introduce this slight tribute of affection and esteem.

EDWARD NEWMAN.

A List of the Birds of Banffshire, accompanied with Anecdotes.
By THOMAS EDWARD, Collector of and Dealer in Natural-History Specimens at Banff.

(Continued from page 5202).

The Spotted Flycatcher (*Muscicapa grisola*). It is somewhat strange, but no more strange than true, that this sylvan and garden-loving species should also be found nesting and inhabiting wild and rocky ravines; yet such is the case: I have met with them twice in

such situations. Whilst rummaging about, a few summers ago, amongst the rugged and narrow dens of Gamrie, in search of ferns, grasses, &c., I was not a little surprised and delighted at meeting with a pair of these birds, and at finding their nest, which contained four young ones, and which was placed on the ledge of a massive rock above a small waterfall, and beneath but close to the root of a bramble-bush. It is very strange to see how long these creatures will frequent the self-same twig when once they find one to suit them. I have seen them more than once hold to one for several hours together, never leaving it but to seize any unlucky fly which dared to attempt to pass that way, when they would again, without alighting on any other, invariably return to their old stand, or watch-tower, to await a new arrival; then another dart, and then back again. I have known them also to occupy the same tree and the same branch for many years together. It would appear that after they have taken a house they are by no means a wandering species, not going far from home. Well, this is to be commended. They are not very numerous with us, a few pairs only arriving annually, which breed in various parts of the county.

The Pied Flycatcher (*Muscicapa atricapilla*). A pair of these birds are said to have bred in a garden near this place about fifteen years [since. Of the fact I am not aware myself, but give it as a hearsay. I mention this because a person ought to be very cautious how he acts with flying stories of this kind, and ought not to be rash or hasty in making public anything for the truth of which he cannot himself vouch; the more especially when we see and hear such things as the kestrel being recorded as the sparrowhawk, the merlin as the peregrine falcon, the common buzzard as the honey buzzard, the missel thrush as the starling, the starling itself set down as a foreigner which no one could name, the green linnet as the crossbill, and, lastly, though not least, a species of the Medusa, or a fragment of one, as the *Astrophyton scutatum*! It is best to take a little time with these things, so as in some measure to know them before we say this or that about them, and not act like one mad, or with the seeming determination of out-stripping or knocking on the head everybody else, in order to be considered wise and learned, and at whatever cost. O, no! Let us have a little patience; that is the best thing. However, whether the circumstance of the breeding of the pair just referred to be correct or not, one thing is certain, that I have a specimen, a male, in my possession, which was shot about thirteen miles from this place, in the spring of

1848, and which, if I mistake not, has already been alluded to in the pages of the 'Zoologist,' by a much-lamented friend of mine, the late Rev. James Smith, of Manquhitter, the warm-hearted, feeling and benevolent Rector (the name he was best known by amongst us), and the friend of all; but who now, alas! lies in a lonely corner of Cuningstowm.

The Dipper, or, as we have it, the Water Cockie (*Cinclus aquaticus*). A curse on foul superstition! and a curse on wilfully ignorant and prejudiced minds!—minds which will not be enlightened, do for them whatsoever you will. Alas, poor dipper! Time was, and we remember it well, that when we used to walk either by the river's bank or along any of our smaller streamlets our eyes seldom, if ever, failed to be greeted by a sight of several, if we went any distance; but now, alas! we may wander for hours, nay, for days, and not see one, or but a solitary individual or two at most. Our salmon are scarce, and, what is worse, are said to be getting scarcer and scarcer every year; and the poor little dipper is branded, justly or unjustly, as one of the chief agents, if not the only one, in this work of diminution; and every means is therefore put in requisition which it is possible to conceive, in order, as it were, to extirpate the little bird altogether. Well, it may be that it is in some measure guilty; but this, however, I must say, that I have never as yet found anything at all pertaining to fish in the stomachs of those, amounting to nearly forty, which I have dissected; water-insects and their larvæ being what I have most frequently observed. Only convince our salmon-fishers of this, and I will say that you are a very clever fellow indeed. But we shall leave him for the present, and proceed with his brethren, hoping that, as the light of science and common sense dispels the darksome gloom of ignorance and prejudice, better times will dawn, both here and elsewhere, on the poor little dipper.

The Missel Thrush (*Turdus viscivorus*). About twelve years ago such a bird was hardly known amongst us. A pair at that time lived in the garden of Denlugas. A year after, a few were seen at Park. Since then, however, it has considerably increased, and bids fair to outnumber the common species, for as the one is gaining ground the other is losing it.

The Fieldfare (*Turdus pilaris*). A winter visitor. We call them "Hel-in-piets," that is "Highland-piets." They arrive here generally in October, and depart again in April. A few, however, may be seen mostly every summer in our woods, so that they do not all leave us. I am not aware, however, of their breeding with us, nor do

I think they do so, although some do thus remain; at least, I have searched often and long for their nests, but have not as yet been rewarded for my trouble. Some seasons they occur in thousands, others, again, only sparingly.

The Song Thrush or Mavis (*Turdus musicus*). Who is there that has ever trod the weedy dale or whinny brake in early spring, and, having heard the mellow voice of this musician of the grove, was not struck with delight and enchanted at the peculiar richness and softness of his tones? If there is such a one, go, go, I say, thou creature of stone, or of something worse,—something harder and colder than stone! I envy thee not. Nature smiles not for thee. For my own part, I must say that of all the birds which adorn and enliven our woods I love this one the most. There is to me a sweetness in his song which few, if any, of the others possess; besides, he is generally the first here to hail with his hymn of praise the young and opening year. But, alas! poor mavis. The other winter it suffered severely here, scarcely one being left. In a tour through the greater part of the county, last season, we only heard *two*, and saw but *three*. In ordinary times it is quite common. This summer, however, there are more of them, and a pretty good appearance of young; so that when spring comes again we hope to hear our woods and groves once more resounding with their soul-stirring strains. Having brought home, a few summers ago, a nest of young mavises, and having placed it on a table, I was somewhat surprised to hear a *chuck, chuck, chuck*, from another part of the room. Looking up to a favourite bird, an old thrush, I had in a cage, I was no less surprised at seeing him running about the bottom of his dwelling with his mouth crammed as full of bread as it would hold, chucking away all the time, and ever and anon trying to get out at that part of his house which was next the young birds. From this circumstance a thought struck me, namely, that I might be saved the trouble of rearing the youngsters myself, as I intended. Accordingly, in goes the nest. I soon had the satisfaction of seeing my household pet as busy with and as eagerly feeding his adopted children as if they had been his own. I was glad of this. In a few weeks I had as nice and as pretty a brood of young as ever eye rested on. The bird, I may mention, was an alarum-taking one. But, alas! about three months after the above affair, a skulking, thieving, wretch of a cat, belonging to a neighbour, got in one day when we were all out, and—need I say the rest of it?—killed my faithful and much-admired nurse. The young were away this time, or all would have shared the same fate. There is one fact in con-

nexion with the rearing of these birds which I must not omit to mention, namely, that if any of the young would not open their mouths to receive food when requested the old one knocked them soundly on the head with his bill until they did so. I observed this frequently, and was not a little amused at it.

The Redwing (*Turdus iliacus*). A winter visitor, like the fieldfare, but not near so numerous. A few of these, too, may be occasionally met with here in summer; but I do not think they breed here either. They are by no means so shy nor so difficult to get at as their friend and companion, the fieldfare. Both these, as well as the missel thrush, suffered dreadfully the other winter, when the mavis was so much cut up; but none seemed to stand it so well as the missel, being doubtless the strongest of the four.

The Blackbird, Blackie, &c. (*Turdus merula*). Generally distributed, but not in great plenty in any place. White varieties have been occasionally met with as well as pied. When the storms of winter send our thrushes to the sea-shore to seek for food, this chap betakes itself to farm-steadings, stable-yards, and to the towns; by which means he never suffers so much as the others. A lady who resides here, and who has a love for flowers, had, in the spring of 1849, in a portion of her garden set apart for that purpose, got planted a choice selection of annuals. As is customary in such flower-plots, a small stick was stuck into the earth beside each species, with a slip of paper or ticket inserted in the top, on which were inscribed the names of the various plants. The garden has a wall round it, and there is no means of access but by going through the dwelling-house. Now, it would most naturally appear that these tickets or slips of paper could be of little or no use to any one; but it is a small and worthless thing indeed that is not envied by some one. The tickets began to disappear, and day after day got less and less, the empty sticks being alone left to tell that they were gone; and what added to the strangeness of the affair was that they were not taken indiscriminately, so as to strip one place entirely bare, but only here and there. In this there appeared a deep cunning. It was very strange, the lady thought, and wondered if it was a trick that some one was playing her. Well, she would see. Her brother, with whom she resided, was told the fact, and questioned; but no: he knew nothing at all about them, but thought the circumstance very curious. The servants were next taxed; but no: they, too, knew nothing of the affair, and had seen no one but the lady herself near the spot since the place was planted. This seemed very marvellous.

But the cat! ah, the cat! The cat, you know, does a great deal of mischief besides the killing of my household pet, the mavis; such as eating the cold meat and fowls, running away with the puddings and the fish, drinking the cream (not to speak of porter and spirits), and breaking the dishes, with a whole host of other such-like things. In this case, however, I don't think that she was once mentioned or thought of. Well, time wore on, and still the tickets were disappearing, to the no small surprise of all in the house, for all were now on the alert to detect, if possible, the mysterious thief, but to no purpose, for despite their watchfulness the sticks were robbed. Old Father Time, however, the revealer of many secrets, at last unveiled the mystery. The lady, rising one morning rather early, and having gone to her bed-chamber window, which looks into the garden, observed a blackbird hopping about amongst her now almost ticketless bed of annuals. At this, however, she was not at all surprised, as birds of all sorts were numerous in the garden, from their being encouraged. But judge her amazement when she beheld blackie seize hold of one of the remaining tickets, and tug and pull most lustily to get it disengaged, but failed in doing so. The bird, however, nothing daunted and not to be beaten, tried another, this time succeeding (this may explain why some were left here and there, as already mentioned), and, flying away with it, disappeared amongst the branches of a pear tree further up the garden. "What!" wondered the lady to herself, "can this actually be the thief that has taken my tickets, and eluded detection so long?" Well, we shall see by and by. Accordingly, on going to the tree alluded to she was most agreeably surprised at seeing, in a cavity, all her lost tickets, in the form of a blackbird's nest!

The Ring Ouzel (*Turdus torquatus*). Rare. A few breed now and then amongst the hills in the higher districts of the county.

The Hedgesparrow, Gray Robin (*Accentor modularis*). We have this very modest, lovely, unassuming little bird generally distributed, but nowhere in abundance. Wherever there is a patch of whin of any extent, or a nice bit of hedge, you may rely on finding at least a pair. I remember once finding a nest of these birds, with young, so late as the 19th of September.

Robin Redbreast (*Sylvia rubecula*). This rather bold, red-breasted gentleman, or cock-robin, as we call him here, is somewhat more numerous than the last. Is it not very strange, not to say lamentable, that even in these enlightened days of ours there should be many who still believe and say that the wren is the female of this

bird?—yet so it is. Truly may we exclaim, “Surely the Natural-History schoolmaster is abroad or dead altogether.” As sure and constant as autumn bares the harvest fields, so sure does robin, the summer inhabitant of our woods and copses, come to tell us, with his chilly song, when all other birds are mute, that long and dark-some nights and stormy days will soon be ours. But who amongst us, although he does thus come to warn us that winter is coming, could be cruel or harsh to the little bird, or grudge him a crumb? Not I! I love little robin, and have loved him ever since I was a child and first read the ‘Babes in the Wood;’ yes, and I love him still.

“ Welcome, welcome, little bird with bosom red,
Thrice welcome to my humble shed.”

Some winters ago, during a severe storm, one took up his quarters in a merchant’s shop here, and, food being given him, became very familiar, and appeared to be quite at home, so much so, in fact, that it was expected as well as wished that he would have remained. But no: after about four weeks the snow disappeared, and so did *bob*. I have known these birds have eggs as early as the middle of March.

The Redstart (*Sylvia phaenicurus*). Rare. In a garden in Banff, in Duff House and Cullen House policies, in the garden of Rothiemay House, near Keith, and at Drummuir, are places where they have been known occasionally to breed.

The Black Redstart (*Sylvia tithys*). I am only aware of two of these birds, a male and female, having been seen within our county, and one of them, the male, was procured. This occurred in a garden in Cullen, in March, 1851.

The Stonechat (*Sylvia rubicola*) and the whinchat (*S. rubetra*) are in about equal numbers, neither of them being numerous. They remain with us all the year through.

The Wheatear (*Sylvia oenanthe*). A summer visitor. I have seen them as early as the month of February, and as late as October. They generally appear on the sea-shore first, and then disperse inland. I remember one early spring, whilst searching about for ptarmigan and some other things on Benvennis (not Ben-Vennis, as printed in a former part of my list, Zool. 5119), and just as I had gained its summit, meeting with one of these birds hopping about alone amongst the stones, which were there partially covered with snow. With the exception of a few white hares, it was the only living object I could discern on the top of the mountain. They are

never called the wheatear here, but simply the "stean chackert," that is, "stone chatterer."

The Sedge Warbler (*Sylvia Phragmitis*). Rare. It is only of late years that this species has thought proper to visit us, a few doing so annually. How pleasant and how enchanting it is to wander by the margin of the running stream, either at latest even or earliest morn, or even during summer's midnight hours, and hear the sedge warbler pouring forth his long, harmonious song, himself all the while hid in some neighbouring bush. A person not acquainted with the bird would think that there were a score of different sorts, so variable and so like the song and call-notes of many others is his ever-changing yet pleasant lay. Besides being found amongst the reeds and bushes along the river's banks, these birds are also to be met with on several of our whinny knowes and brambly brakes, far removed from any water. I have seen them on the Binhill, a long, dry and rocky ridge of hilly land near Huntly, and stretching hence away towards Keith.

The Blackcap (*Sylvia atricapilla*). Rarer even than the last. A few pairs in Duff House and Cullen House policies, and occasionally at Mayen and Rothiemay, are amongst the chief, if not the only, places which they frequent and breed in. A most noble songster; but I prefer the thrush. O, yes! I love to hear the soft and mellifluous notes of our darling mavis above all others; his high-toned voice is so sweet and so mellow that it sinks to the very core, and charms one so much.

The Whitethroat (*Sylvia cinerea*). Somewhat more numerous than either of the two last-mentioned, and generally arrives about the same time. I once found the nest of a whitethroat, with young, at the end of August. The young were only a few days old.

The Wood Wren (*Sylvia sibilatrix*). Very rare. I am not aware of this bird breeding here, but from the fact of having seen it at intervals, and likewise from the circumstance of its having been observed by others, as by Donaldson (a gentleman whose name I have already mentioned, and whose word can be relied upon) at Bayndie, I make no doubt but that they may at times do so.

The Willow Wren (*Sylvia trochilus*). This species may be said to be common throughout the whole county, in summer, wherever there are weeds, plantain, whin, broom or bramble-bushes, as also in gardens and orchards; and I am sure that none of all our summer birds are more willing with their music than this lively little fellow, for from morning till night, for several months, he is almost constantly pouring forth his quivering, shrill strains. The general place of nesting with

these birds, as is well known, is on the ground; but they at times choose other spots, such as bushes, trees, and the tops of walls, in all of which places I have myself met with them, and on one occasion outside the bottom of a magpie's nest, in a tree, about ten feet from the ground. Both had young at the same time. The outside family, however, flew before the inside ones were able to quit their home. Seldom a summer passes but a pair take up their abode and rear their young in a burial-ground situate nearly in the centre of the town.

The Chiffchaff (*Sylvia rufa*). I know of only a single bird of this species having been either seen or found within our district, and that one, a male, was procured by myself, in Duff House policies, in the summer of 1845. I have never seen another.

The Goldencrested Regulus or Wren (*Regulus cristatus*). Wherever there are suitable woods, and we have not a few of them, you will find this bird with us, not in multitudes of course, but in pretty fair numbers. At one time I knew of five of their nests in one wood, all within a space of about thirty yards of each other. A birdcatcher, fresh from the wood, perambulating the town with his wares, some years ago, sold one of these little creatures to a shopman for a sisken. The purchaser having asked what sort of food he should give it, "Hemp-seed, to be sure," said the vendor as he pocketed his half-crown, the price of the bird, and walked out. Accordingly, it was caged and had hemp-seed supplied; but, poor little thing, not being at all acquainted with such sort of food, and none other being proffered, it lingered, I think, for about two days, and then died.

The Great Titmouse (*Parus major*), the Blue Titmouse (*P. cæruleus*), the Cole Titmouse (*P. ater*), and the Longtailed Titmouse (*P. caudatus*), are all in about equal numbers. In a city not far from this place there were once exhibited, in a taxidermist's window, two stuffed birds in a glass case by themselves, ticketed "redstarts or fire-tails, male and female." Now, the fact is, for I saw them, that the one designated the female was indeed a redstart, but the one said to be the male was neither a redstart, nor a blackstart, nor a firetail, nor a watertail, but simply a titmouse. Hence, again, the necessity of being very cautious in believing birdstuffers, except we know them to be naturalists or at least ornithologists. It is rather an interesting and pleasant sight, and one which I have often witnessed, to see small bands of these lively, active little birds, together with the goldcrests and creepers all in company, foraging about amongst the leafy trees in winter; the tits on the branches, the creepers on the trunk, and, if

there is no snow on the ground, the goldcrests generally lower down, near about the roots. All is life, bustle and animation, each cheering the other with its tiny note. But should danger near them all are as mute and lifeless as if they formed a part of the tree on which they rest. Hawky passes, however, and the ever-watchful little party get again in motion.

The Marsh Titmouse (*Parus palustris*). This bird is, so far as I am aware, rare with us. I have seen it, but that very seldom.

The Crested Titmouse (*Parus cristatus*). Two are said to have been procured here. I mention this merely as a hearsay, not being acquainted with the fact myself.

The Bohemian Waxwing (*Bombycilla garrula*). This bird is an occasional winter visitor. Some seasons large flocks will appear, then only a few, then, again, perhaps none; and this may be the case for many succeeding seasons. One very stormy winter's night the inmates of a house in Gardenstown, a small fishing village, about eight miles from here, were a good deal surprised and startled at hearing, despite the din without, what appeared to them a strong noise in the chimney. They were seated round the fire. What could it be? it was wondered. No one could tell; but all were aghast with affright. The North wind roared, as if it would have roared its last; the sea bellowed and moaned, as if it, too, intended never to be heard again; the hail rattled and pelted against the windows with such violence that it seemed intent on breaking them to pieces. It was, indeed, a fearful night, and all crept closer and closer. But still the noise in the *lum* was quite audible above the roar of the elements. Nearer and nearer it came, and keener and keener grew the consternation within as the countenance of each became paler and paler; until at last down it rushed right into the very centre of the group, knocking out the light, filling the place with smoke and soot nearly to suffocation, and spreading dismay and fear on all, who now, knocking each other over in attempting to get out of the way, screamed with down-right terror. All roared for help, and rushed and scrambled, helter-skelter, the best way they could, to hide themselves in any available corner or nook they could reach. "Lord, fat is it, Jock?" shouted one to another, after a pause. "As surely the deevil or some o' his legion." "I dinna ken," said Jock, "but the Lord hae a care o' us a', for I'm likin' to chock." "Open the dore (door), Bell, or I'll dee; I canna get breath; the reek's cuttin' my throat." "Na," whispers Bell, "I'm fearet t' move; dee't yersel'." "It's surely the end o' the wairld, or fat else can it be?" muttered a third. "But I'll be scun-

viced (choked) alive if some o' ye dinna open the dore or the win-nocks" (windows), cried a fourth. "O me! O me!" squeaked another, "I'll be stifled wi' seet (soot) if I get na air; fat will I dee?" (do). Courage, however, at last prevailed, and, the door being got open, relief was speedily administered to the suffocating and affrighted inmates. A light being procured, judge their astonishment when, instead of the Old Boy, they beheld, sitting on the edge of a stool, which had been capsized during the *melée*, in the middle of the room, the unconscious cause of all their alarm and trouble, in the shape of a little and beauteous bird, a stranger, which none knew, but which proved to be a waxwing! This happened in January, 1850.

THOMAS EDWARD.

Banff, September, 1856.

Ornithology of Switzerland. By the REV. ALFRED CHARLES SMITH, M.A.

In common with other readers of the 'Zoologist,' I perused with great pleasure Mr. Bree's notes relating to the Natural History of Switzerland, and I would beg leave to echo all he says of the wonders of the vegetable and insect world in that most magnificent country; but I am sure that gentleman will excuse me if I ask his permission to add a few facts relating to the Ornithology of Switzerland, and I do not think I shall be accused of presumption in so doing, when I state that I have passed several summers amidst those stupendous mountains—have been up and down every carriage-pass save one, and most of the bridle and foot-passes—and, in short, have pretty well explored twenty out of the twenty-two cantons; and as, in all my rambles, I had a keen eye to birds, some of which I have searched for with my gun, and others I have watched and followed with deep regret that no gun was at hand, and very many of whose stuffed forms I now see around my room in my collection, reminding me of glorious excursions 'mid the forests, the glaciers, the wild mountains, and the lovely valleys of that most enchanting country.

I think every Englishman who has travelled much on the Continent will have been struck, not only with Mr. Bree, at the scarcity of birds in the Swiss mountains, but also generally through the whole of France, Belgium, Germany and Italy: from the time he leaves England till his return he may drive through the endless corn districts

of France, through the interminable plains of Bavaria, through the boundless solitudes of the Black Forest, even through the vineyards and gardens of Italy, and, comparing the result of his observations with what he sees daily in his own country, he will marvel at the paucity of specimens of the feathered race; and though this holds good, to a great extent, with regard to Switzerland, yet I confess my own impression, derived from my own observation, is to the effect that, compared with the other countries above named, Switzerland is rather rich in birds than otherwise, if we bear in mind at the same time the nature of the country, what vast tracts are totally unproductive, mere masses of barren desolate rock, or huge fields of ice, and that comparatively a very small portion indeed of the whole country is available either for the habitation of man or the existence of any members of the animal kingdom. With regard to quadrupeds, though not quite so unfortunate as Mr. Bree, as I have seen both the chamois and the marmot in a wild state; the former pointed out by the guides as mere specks on the rocks on the Mer de Glace at the back of Grindelwald, and the marmots in the most desolate and wild track I ever traversed, on the way to the Jardin at the back of Mont Blanc, yet I have had but little experience of the furred tribe in Switzerland, nor indeed have I searched for them at all; but, with respect to birds, the case is different, and I have had many an ornithological treat during my wanderings in the mountains, having accidentally come upon several species which I have never seen alive before, and of these occurrences I beg leave to make a few extracts from my journals.

It was on the 4th of September, 1844, when near the summit of the splendid Splügen Pass, that I had a distinct view, for above a quarter of an hour, of two of those monarchs of the Alps (at least such I suppose them to have been, for I have never before or since seen any living birds, not in confinement, approach them in size), the *Lämmergeyer*, or "vulture of lambs." I had left the carriage to wind its tedious way up the zigzags, and was leisurely clambering up the steep mountain-side, and not far from the summit, all around me being partially covered with snow, and not far off the glaciers, which are the sources of so many of the Italian rivers, at an elevation between six and seven thousand feet above the sea, when suddenly, and at no very great height above me, appeared two gigantic birds of the eagle tribe, now soaring aloft, now sailing in circles, now ascending so high that they appeared mere specks in the sky, and were almost lost among the clouds, now rapidly descending and appearing larger and larger, till

they floated along, on almost motionless wing, at no very great height above the ground: it may be imagined with what intense pleasure I threw myself on the grass, and how eagerly I watched every motion of those glorious birds, so much larger than any I had ever seen on the wing, and how I strained my eyes to gaze after them when they soared out of sight, and how I hailed their reappearance with delight, and how loath I was to leave the spot over which they continued to hover, when fear of missing the carriage compelled me to go on. The recollection of that morning on the Splügen will never fade from my memory; the scenery so wild and desolate, and so well harmonizing with the only living creatures to be seen, monarchs indeed of those alpine heights,—a vast domain of rock and ice and snow. That is the only occasion on which I ever saw what I believe to be eagles of a first class order, for though I have seen many a large falcon, hawk and buzzard in Germany, Switzerland and Norway, I have never seen any bird at all to be compared in size with the two noble creatures soaring as guardians over the Splügen Pass: what induces me so confidently to pronounce these birds *Lämmmergeyer*, is the sight of a fine specimen of that bird, not long after, in the Museum of Berne, which, suspended from the ceiling with outstretched wings, must at once, from its vast extent of wing, arrest the attention of every observer, and the birds I saw on the Splügen appeared to me to be precisely similar to it (as far as I could judge) in size, shape and general appearance.

The Eagle Owl (*Bubo maximus*). Very different, but not less wild or awful in character, was the scene of my meeting with the eagle owl: it was in the Canton Graubünden (Grisons), and close to the entrance of the Via Mala, that wondrous gorge, four miles in length, through which the infant Rhine forces its way, and far above which a road has been constructed with amazing engineering skill, sometimes as a tunnel, sometimes as a mere shelf in the side of the cliff, now crossing the terrific chasm below by a bridge of a single arch, 400 feet above the torrent, now recrossing by another bridge at a no less giddy height. It was here, in this tremendous gorge, perhaps one of the grandest in the world, the cliffs on either side 1600 feet high, but frequently not above ten yards, and in some places not eight yards apart, that the eagle owl now in my collection had its home: well calculated indeed must this dark and silent chasm have been for the retreat of the king of owls; shut out from all rays of the sun, inaccessible till recently to any human being or four-footed creature,—in perpetual silence, save the murmuring of the tiny Rhine in its uneven bed many hundred feet below,—in perpetual shade, solitude and

silence,—could the great owl doze away all his days; and then what a quiet retired breeding-place—what a famous nursery for its young—must these vast cliffs have been! But it was not my good fortune to see him alive in his own haunts, nor to fetch him down with my own gun; but, as I was entering the shades of the Via Mala, I met a man emerging, gun in hand, with some weighty burden (which I at first supposed to be a roebuck or chamois) suspended at his back; this turned out to be the yet warm but lifeless body of a noble eagle owl, which I soon induced him to sell to me, though not without the loss of one much-prized foot and claw, as token of his prowess, and proof of his title to the reward granted by the Syndic for the destruction of a bird of prey, and which no entreaties or bribes of mine could induce him to forego. That evening saw me wandering from house to house in the small town of Thusis, seeking, and for a long time in vain, from those in authority, to obtain a written order for a preparation of corrosive sublimate, wherewith to preserve the skin of my prize, but without which written authority from a magistrate no chemist dared sell the smallest particle of any deadly drug, so little are those unsophisticated people acquainted with the merits and the common use in more civilized lands of strychnine and all its congeners: that night, too, saw me employed far into the small hours, in what was then, to my inexperienced, unpractical hands, a difficult, laborious task,—in removing the skin from the body; and I was almost tempted to throw it all away in disgust, at the discovery of a huge rat, swallowed whole, in its stomach, the tail yet remaining in the throat, and which accounted for the finder slaying it, as he said, asleep, gorged as it was with its late unsavoury meal: however, at length my desire for so great a prize triumphed over my fastidious delicacy, and my perseverance was rewarded by the glorious specimen which I now see amongst many other trophies of many other pleasant scenes.

The Common Dipper or Water Ouzel (*Cinclus aquaticus*). I am surprised that so accurate an observer as Mr. Bree clearly is, did not chance to see this lively little bird more often, as I found it so frequently, watched it so very often, shot it occasionally, and brought home several specimens, which I had procured in different localities. I can quite understand that the dipper may object to the thick waters of the glacier, so well described by Mr. Bree, and which, moreover, being simply newly-melted snow and ice, is of intense coldness; but there are hundreds of torrents and mountain streams in Switzerland, whose sole origin are the springs welling from the mountain-sides, and hundreds more which flow clear and pure from the dark unfathomable

tarns to be found in the higher ranges of mountains ; and these mountain torrents are the delight of the little dipper, which flits over the water, and loves to perch on some vast fragment of stone, in and out among the roaring, foaming water, gazing at its boiling, mad, riotous career, entering into its gambols with all its heart, and rejoicing in the hubbub. I can scarcely particularise localities, as I happen to have fallen in with it very often, in the neighbourhood of Thun, and the valleys running up thence towards the Oberland ; in the valley of the Rhone, and the tributary streams descending thereto ; in the vale near Chamouni ; on the Simplon Pass ; in the valley of the Reuss, in Canton Glarus ; and, above all, in Cantons Appenzell and S. Gall, and the fine mountain streams abounding therein ; but I think it would be found generally throughout the country, were the smaller quiet vales explored as much as the greater and better known passes. How I once met with a very remarkable breeding-place of the water ouzels, behind a waterfall in one of the most retired valleys of the Canton Appenzell, at the foot of the Eben-Alp, I have already detailed in the 'Zoologist,' in my 'Norwegian Notes' (Zool. 3027).

The Ring Ouzel (*Turdus torquatus*). Once only was I so fortunate as to see this bird in Switzerland, but I know from others that it is not at all rare there : the place where I met with it was just of the same nature as the spot where I found it so frequently in Norway, viz. the lower part of a mountain, either dotted with bushes or barren and rocky ; and of such scenery—wild, desolate and rarely trodden by man—there is a vast extent throughout the country, so that we are not surprised to hear that the ring ouzel is a well known bird there.

The Black Redstart (*Phoenicura tithys*). I cannot say that I have ever met with this bird alive, but I have the best evidence of its frequent occurrence in the country from a knowing ornithologist, who showed me several stuffed specimens and skins which he had himself procured, and from whom also I obtained an egg, laid in a châlet contiguous to his home.

The Mountain Linnet (*Linota montium*). High up in the mountain, flitting to and fro among the rocks, always active, merry and cheerful, have I several times met with this sharp little bird : he seems to delight in the upper pastures, where the sheep and cows graze in the summer, where the air is always keen, and even in the height of summer the nights are cold.

The Rose-coloured Pastor (*Pastor roseus*). The late much-lamented Mr. Yarrell (whose recent loss the whole scientific world, in common

with his more intimate friends, is deplored so much) states, under the head of this bird, that "specimens have been obtained several times in the neighbourhood of Geneva," implying that it is a rare bird in the country generally, but though I have never been so fortunate myself as to see it wild in that or any other country, yet from the numerous stuffed specimens and skins I have seen in various parts of Switzerland of birds shot in those parts respectively, and also from what I have been told by persons residing in the country, I am inclined to think that the rose-coloured pastor is, if not a regular summer visitant, yet by no means a rare straggler there. It is astonishing and very mortifying how quickly the beautiful rose-colour, from which it derives its name, fades after the death of the bird; at first the tint is very vivid and most delicately soft, but in course of time it gives place to an almost dirty white, which, I regret to say, is the case with the specimen which has now been in my collection some years; though this sad fading away of delicate colour is not confined to Pastor roseus,—the beautiful salmon-colour of the goosander, so exceedingly rich while the bird is alive and immediately after its death, vanishing in process of time with most annoying rapidity; and the same may be affirmed of many others of our most delicately tinted and most beautiful species.

The Jay (*Garrulus glandarius*). I have on several occasions observed this bird in various parts of the country, chattering among the orchards and little homesteads of the peasant farmers, or flying among the trees of the larger forests, with which so many of the lower mountains are clothed.

The Nutcracker (*Nucifraga caryocatactes*). On two several occasions has it been my good fortune to see, and not only to see, but to have a good opportunity of watching, this bird in its wild state, and a fine, bold, strongly-built, active fellow he is; the first time was in 1839, in the valley of the Reuss, which I consider one of the most grand and picturesque of all the valleys I have explored, and which I have twice seen at great advantage,—when the torrent had been unusually swollen with rain, and at one time in extraordinary grandeur, in the midst of a succession of some of the most terrific thunderstorms I ever witnessed. I shall never forget the scene at the famous "Devil's Bridge," when, already drenched to the skin, we were gazing over the parapet at the impetuosity of the raging Reuss,—foaming, tumbling, dashing, roaring along, with such a din and such a spray as I had never till then witnessed,—a din that drowned our voices, and a spray that dashed over the bridge, high as it is above the water: we were

standing on the bridge, in the midst of a pelting rain, admiring the grand but awful scenery, when a flash of lightning, accompanied instantaneously with a tremendous clap of thunder, which seemed to shake the very bridge on which we were standing, made us start from our places, while it added tenfold to the awfulness and grandeur of the scene; but indeed the whole vale from Altdorf, where Tell defied Gessler, and shot the apple from his boy's head, to Andermatt, where we found the Reuss breaking its banks and washing away several cottages and a farm, to the dismay of their terrified owners, was a succession of such scenes of Nature, in all her most majestic and imposing aspects, as, partly from being the first views of the bird I had seen, and partly from their intrinsic grandeur, heightened by the storms I have described, will never fade from my memory; and it was in this scenery, and during a gleam of sunshine between the storms, that a nutcracker flew across the road, and obligingly perched on a branch of a tree by the roadside, not twenty yards distant, where he remained very uncomposedly, while I had ample time to admire his compact robust figure, and his active, quick motions, his strong sharp beak, and his peculiar mottled plumage of brown and white, ere he caught sight of me, and hurried away out of sight among the trees. The second occasion of my meeting with the bird was in 1851, in very different scenery, not half so wild, but very beautiful, on the borders of the Tyrol, near the Engadine Pass, where, though the mountains were high, they were well clothed with forests at their feet, and the valley was one of those smiling sunny scenes of fertility and industry often to be seen in the broader vales: and here again the nutcracker very considerately came close to where I was resting on a bank, and remained, hopping from branch to branch, dressing his feathers, and quite at his ease for above five minutes, not the least aware what eager and prying eyes were watching his every movement, and that only the power, though not the will, was wanting to make him my prize. I think myself particularly fortunate in having seen these two nutcrackers, because so many other English tourists, keen observers of birds too, have come back disappointed at not meeting with one, but I imagine them to be tolerably abundant in the country, from the testimony of more than one observer of birds.

Great Black Woodpecker (*Picus martius*). Though I never saw with my own eyes this fine bird alive in Switzerland, yet my companion with whom I was walking did, and though I came up to him the minute after he had seen the bird, and rushed into the wood in pursuit the instant I heard his account, I could not gain a sight of him

then, and not till many years after, in Norway, had I the pleasure of watching him in his wild state, as I have more fully detailed in my notes on the Ornithology of that country (Zool. 2945); but I brought home a skin of this bird from Switzerland nevertheless, which I procured from a great hunter and bird-collector, named Herr Nager-Donazian, at Andermatt, on the S. Gothard Pass; and here I will take occasion to remark, that, for a collector of objects of Natural History in almost any branch, a more excellent place for head-quarters can scarcely be named than Andermatt: if he be a geologist and mineralogist, the S. Gothard Pass is renowned for the variety and value of some of the specimens it produces; if he be an ornithologist, a single visit to M. Nager-Donazian's private museum of his own collections in that district, will speak volumes of the numbers of rare birds occasionally to be met with there, while the botanist and entomologist will find an ample field for their exertions, and all the while they may pursue their avocations amidst most grand scenery, in close vicinity to the celebrated Furca and Grimsel, or the glorious S. Gothard, the Ober-alp, and the valley of the Reuss.

Tichodroma phoenicoptera (Tichodrome échelette). I am indebted to my friend Mr. Alfred Newton (well known for his ornithological lore to the readers of the 'Zoologist') for pointing out to me the name and description of this remarkable bird by Temminck, and which, with his usual indefatigable zeal, he ferreted out, after hearing my account of the bird which I had on two occasions seen in Switzerland alive, and many times in the collections and museums throughout the country: the first occasion of my seeing it was in 1841, in the midst of the grandest scenery of the Simplon Pass, on the very borders of Switzerland, when coming out of Italy. It was when emerging from one of the numerous tunnels in the solid rock, near the village of Gondo, that I saw what at first sight looked like a gigantic butterfly fluttering with extended wings in front of a perpendicular wall of rock: when I examined the bird afterwards in a collection, mounted on a perch, with closed wings, it looked mean and dingy enough, with the long curved slight bill of the creeper, and with a plumage of dull brown, but when I saw it with extended wings, hovering near the rocks, and fluttering and dancing up and down, it presented a most gorgeous and brilliant appearance, more in accordance with the vineyards and gardens of Italy, which we had left, than the savage and grand scenery of the high Alps, where I saw it: its sole title to beauty of colour consisted in the bright red in its wings, which, as it fluttered near the face of the rock, shone with something of metallic brilliancy, and wherein it bore

a close resemblance to the large grasshoppers with their bright red wings, so accurately described by Mr. Bree. I again had a distinct and close view of it near Weissbad in the Canton Appenzell in 1844, when ascending the Eben-alp, on an excursion to Wildkirchlein: it was close to the solitary hermitage of a Capuchin friar, far up the mountain, in a most wild and romantic spot, while our companions, some Swiss, were making the rocks re-echo with their Alp-lieds and rang-de-vaches, or Jödel (of which the Canton Appenzell is the true parent), that I spied another of the brilliant birds which I had admired years before on the Simplon: it was literally dancing against the face of a perpendicular rock, its bright red wings quite glowing in the sunshine, and suffered me to approach within a dozen yards and watch its movements, without taking the smallest notice of my presence. The *maitre d'hôtel* at Wiessbad called it the *Berg-vögel* (mountain bird), and assured me he had shot hundreds of them: it is the "Certhia muraria" and "wall-creeper" of Latham, Gmelin, &c. For the following extract from Temminck (which may be interesting to some who have, like myself, seen it in its native haunts), as well as for the remaining particulars of it, I am still further indebted to Mr. Newton, who sent me what I subjoin:—"Temminck places it in a genus by itself, and says 'Ce que le Grimpereau fait sur les arbres, le Tichodrome le fait contre les pans verticaux des rochers, sur lesquels il se cramponne fortement, sans cependant monter et descendre en grimpant: il s'assugettit seulement de long des fentes et les crevasses des rochers et des murailles de vieux édifices isolés, quelquefois, mais plus rarement de long du tronc des arbres;' and his description of it is as follows:—'Sommet de la tête d'un cendre foncé; nuque, dos, et scapulaires d'un cendre clair; gorge et devant du cou d'un noir profond; parties inférieures d'un cendre noirâtre; couvertures des ailes et partie supérieure des barbes extérieures des pennes d'un rouge vif; extrémité des pennes alaires noire; ces pennes ont deux grandes taches blanches, disposées sur la barbe intérieure; queue noire, terminée de blanc et de cendre; bec, iris et pieds noirs; longueur 6 pouces 6 lignes.' The male and female are much alike: it appears only to inhabit the higher ranges of Southern Europe, the Swiss Alps, Spain, Italy and Dalmatia, rare in Bavaria; it nestles in chinks of rocks, and lays five or six roundish eggs, of a pure white: the Germans call it 'Manerklette' and 'Manerlaufer,' and the Italians 'Picchio murajolo.'"

The Kingfisher (*Alcedo ispida*). I will not say that I have seen this bright and brilliant bird many times, but certainly it was no *very*

uncommon occurrence to meet with it in the retired valleys, hawking some deep and quiet stream, of which not a few are to be found even in that land of brawling torrents and rushing mountain-streams, which so often tear along with almost inconceivable velocity, and some of which (as the Dranee) with a fury which must be witnessed to be understood: such impetuous torrents as these I do not think the king-fisher cares to frequent, but I have come upon it in quieter spots some five or six times, and I always see it in the private collections of ornithologists, several of which I have visited, as well as in the public museums, among the birds of the locality.

The Little Bittern (*Botaurus minutus*). Though I did not see this bird alive, yet I can vouch for the frequency of its occurrence in Switzerland, as I saw the skin in several places, and heard of it many times: I also procured a recently killed specimen near the top of the Simplon Pass on the Italian side.

The Common Coot (*Fulica atra*). This bird may always be seen on the waters of the lake near Lucerne, and while the traveller is exploring the wonders of the three covered wooden bridges,—as he is sure to do,—if he withdraws his eyes from the many curious paintings with which their roofs are garnished, and looks out for a few moments on the lovely lake of the Four Cantons, the most beautiful of all the Swiss lakes, he will not fail to see a whole flock of coots disporting themselves in the shallow water.

But, in addition to those I have enumerated, there are many more of the commoner kinds to be met with occasionally, though nowhere in great numbers; and of the rarer birds I brought home skins of the buzzard, the great gray shrike and the alpine accentor, all killed on the S. Gothard. Perhaps at a future time I may find more ornithological notes of Switzerland of sufficient interest to send to the 'Zoologist,' but at present I have not the leisure to look over rather a formidable pile of journals, in which my daily observations were recorded.

ALFRED CHARLES SMITH.

Yatesbury Rectory, Calne,
September 17, 1856.

Nidification of the Honey Buzzard in the New Forest.—On June 3rd, 1856, a boy collecting wood in the New Forest, about three miles from Fordingbridge, saw what he called a "buzzard" fly out of an oak tree, and on climbing to the spot discovered a nest which contained two eggs: one of these was unfortunately broken in its descent,

the other was brought to me, and proved to be a fine specimen of the egg of the honey buzzard, quite recently laid. I subsequently visited the spot and examined the remains of the nest, which was placed in a trifid fork of the tree at some distance from the trunk, easy of access, and about twenty feet from the ground. Externally it was composed of dead oak-sticks, some as large as the finger, with lichens adherent; the inner part was formed of smaller twigs, and the nest was lined with dead oak-leaves. The tree, a middling-sized oak, stood on the outskirts of a wood called "Sloden," surrounded by holly and yew bushes, in a wild and open part of the forest. The egg in question is very similar in its markings to the first figure in the last edition of Mr. Hewitson's valuable work, and is somewhat less richly mottled than the other in my collection, which I believe came from Sweden. Although I have never before known or heard of an instance of the honey buzzard breeding in this locality, and though it is at all times considered a rare bird with us, I have seen several specimens in various states of plumage which have been shot in the neighbourhood of Fordingbridge, a district which, from its proximity to the New Forest, is rich in objects of ornithological interest.—*J. Reuben Baker; Fordingbridge, August 26, 1856.*

Occurrence of Montagu's Harrier near Penryn, Cornwall.—A male bird of the year of this species was killed on the grounds of J. S. Enys, Esq., last week. The breast and belly of birds of the year of this harrier, both male and female, are of an uniform yellowish bay, but in the male bird there is a deeper tone of red; the back of the male is of a deeper brown than the female, and in young birds the longer quill-feathers do not always reach to the end of the tail.—*Edward Hearle Rodd; Penzance, August 26, 1856.*

Extraordinary Varieties of the Common Nightjar.—I have just seen a most singular freak of Nature in the plumage of these birds, rarely, if ever, known to vary, which has occurred in a young pair shot on the 27th of July, near Holt, in this county. The following description will perhaps convey to your readers some idea of the curious and beautiful appearance of these novel specimens:—The throat level with the eyes on either side, breast, belly, wings, above and below, and the two central tail-feathers, pure white, under tail-coverts partly brown and white; legs and claws flesh-colour; top of the head, back, and remaining feathers of the tail as usual. The birds are exactly alike, with one exception, that the two white tail-feathers are wanting in the female.—*H. Stevenson; Norwich, August 25, 1856.*

Pheasant feeding on Ivy-leaves.—I have received from Mr. King, of Canterbury, an ivy-leaf (which I enclose), taken with many others from the stomach of a hen pheasant on the 18th of January, 1856. They were not all perfect, many being digested: the crop was quite full of them, and the bird smelled and tasted of ivy, though to all appearance in good condition and quite healthy. There was no snow on the ground, so the bird was not pressed for food, there being plenty of wild blue periwinkle and ground-ivy leaves to be had. None of the leaves appear to have been eaten by insects. The bird was shot off a tree by the keeper, who in the dusk mistook it for a wood-pigeon. My friend, who has been a sportsman since 1818, and who is a careful observer, never remembers a similar instance of pheasants feeding on ivy. The above, I need hardly say, is the result of my questioning him upon this, to me, unusual circumstance.—*William Thomson; 11, Dartmouth Villas, Forest Hill, Sydenham; September 3, 1856.*

Occurrence of the Great Bustard (Otis tarda) in Cambridgeshire.—I have waited for some time in the hope that one or other of those gentlemen who most diligently

ascertained some of the particulars respecting the appearance of two great bustards in Cambridgeshire, last spring, would have addressed to the 'Zoologist' a few remarks, to corroborate, and, in some instances, correct the account which my friend Mr. A. F. Sealy published some months ago (Zool. 5063); but, finding they are not disposed to come forward in the matter, I venture to do so, conceiving that it is desirable that no particulars relative to the occurrence of so interesting a bird should remain unpublished. It is beyond all doubt that two great bustards for some time in the early part of the present year (1856) frequented some open fields in the Burwell and Swaffham Fens. The statements as to when they were first observed differ considerably, but Mr. F. Godman and Mr. A. Hamond, who are the most competent to judge, from their having many times visited the locality and having diligently inquired respecting them of persons employed there in field labour, some of whom had seen one or both birds, believe that it was towards the end of January, and not, as Mr. Sealy inclines to think, "about Christmas," that they were first observed, and this accords with the impressions I also received when prosecuting similar inquiries on the spot. It appears to us that it was not until the 20th of February that the one Mr. Sealy mentions was shot at and possibly wounded, for, as far as can be ascertained, a single bird only was afterwards observed, which usually frequented one or other of some small fields of cole-seed, and was more than once approached by labouring men, whose presence it seemed to disregard until they came within shooting distance, but it was constantly disturbed by professional "gunners," several of whom were in daily pursuit of it. On the 1st of March one of them shot at it, but as the attempt on its life was made with an ordinary gun, at a distance of a hundred and fifty yards, there is no reason to suppose it was wounded, yet I believe it was never subsequently seen. Setting aside the accounts of those who actually saw the birds, and who described them with quite sufficient accuracy for one to determine the species to which they belonged, all doubt was removed as to the one which remained, by the discovery of a great many feathers amongst the cole-seed, some of which were shown to Mr. Gould and Mr. Yarrell, both of whom expressed very decided opinions on the subject. On the 3rd of March, two days after the bird was last seen, I myself found, in a piece of cole-seed in Swaffham Fen, many of its foot-prints in the soil, which was in a very dry state at the time. These marks were about six inches apart, and could be traced for a considerable distance, while every here and there the ground was much trampled down, as if the bird had there stopped to feed. The feathers found were principally from the upper wing-coverts, but I saw one scapular, and picked up others from the breast and sides of the neck. Several reports have since been circulated relative to the death of this last bird, but all have as yet happily proved unfounded; it is to be hoped, therefore, that both (or at least one) returned whence they came, and escaped the fate of their unfortunate predecessor who met his death at Hungerford. Mr. Sealy's statement that these birds were "a pair," is, I think, in the physical sense of the word, erroneous, for in no instance was any disparity of size mentioned as existing in the two birds by the many observers of them, some of whom were questioned with special reference to the point: I incline to think they were both of the same sex, probably females. I could not discover that either of the birds had ever been seen in Wicken Fen, as mentioned by Mr. Sealy, and, from the nature of the ground, I should think it highly improbable that they ever put foot in it, Wicken Fen being covered with sedge, and still almost in its natural state, whereas Burwell and Swaffham Fens have been drained and are now arable land. It is quite

clear that the bustard killed near Hungerford on the 3rd of January last cannot have been one of these; but as it is the nature of bustards to migrate in companies it is possible that the three observed this year in England might have originally formed part of the same flock; and I may also add, on the authority of Mr. Baker, the naturalist, of this town, that a great bustard was, in February last, killed in the province of North Brabant, in Holland, which might also have been another member of the roving band.—*Osbert Salvin; Trinity Hall, Cambridge, August 25, 1856.*

Little Crake (*Crex pusilla*) *in the Isle of Man*.—Extract from note-book:—“Isle of Man, 1847. When looking for snipes at the Dog-mill Swamp, about two miles from Ramsey, a crake was shot by me, which, from its wavering flight, and somewhat similar size, I at first took for a jack snipe, but it proved to be a crake, the smallest I had ever seen, being considerably less than the jack snipe.” Although I am aware that the little crake has occasionally been met with in the southern counties, I am not so sure that it has been found before so far north as the Isle of Man.—*Henry W. Hadfield; High Cliff, Ventnor, Isle of Wight, September 8, 1856.*

Occurrence of the Avocet in Nottinghamshire.—I beg to record the occurrence of the avocet (*Recurvirostra avocetta*) in this neighbourhood. I saw one on the 23rd inst., when fishing at the juncture of the Trent and Soar: it was feeding on the gravel towing-path at the mouth of the Soar, and, upon being disturbed by a barge-horse, crossed the Trent close over my head, giving me a distinct view of its curved-up beak. I went up the river for several miles the following day with a gun, but could not find it. At the above-named place the counties of Leicester, Nottingham and Derby meet, so that all three can claim this avocet as a visitor.—*George Wolley; Beeston, near Nottingham, July 28, 1856.*

Inquiry respecting the Sexes of Geese.—I had, on my fancy water at Southend, four Egyptian geese (see Meyer). I lost one—it was the smaller and more delicate bird: we suspected it to be the only female. The remaining three neither attempt to breed or lay. Pray how, and by what characteristics, can I ascertain the sex of the birds, that I may supply what is wanting? I received them as two pairs originally. I have two Garganey teal; they neither attempt to breed nor lay. In both these cases the plumage is nearly identical.—*Joseph Pease; Southend, Darlington, September 5, 1856.*

Black Swans breeding in Confinement.—My black swans began to make their nest about the 1st of January, 1855; the female had laid, I think, five or six eggs by the 7th, when she began to sit; by about the 15th of February she hatched off three cygnets, which are now living, and are fine birds. Their nest was composed of a large quantity of rushes, which they had collected themselves, and was built in a situation entirely exposed to the east winds: the frost was very severe, the thermometer at one time being within a very few degrees of zero, and the snow being very thick on the ground at the time. No further care was taken of them than feeding them with corn. This year they went to nest at the same time; about a fortnight before hatching they made a second nest, for some unaccountable reason, and in endeavouring to move their eggs (but by what means I do not know) they let them fall into the water, where they must have remained some hours: they were put under the bird when they were quite cold, but it is most extraordinary that two cygnets were hatched out of the six eggs: these lived for about six weeks, when one was killed accidentally; the other

died : about a month after which the old bird made another nest, and laid six eggs, out of which she hatched five young ones, four of which are now alive.—*Samuel Gurney ; Carshalton, September 15, 1856.*

On Crustacea new to the British Fauna.

By R. Q. COUCH, M.R.C.S.E.

THE publication of Professor Bell's work on the Stalk-eyed Crustaceans of Britain has been of great service to all who pursue that branch of Natural History. Being the production of an accomplished crustaceologist, receiving information from observers on all parts of our shores, it may be supposed to give a fair representation of all our available knowledge systematically arranged. Being, therefore, a summary of all that is at present known, it indirectly points out our deficiencies, and gives definite directions as to what is required to be done in future. This is at all times a very desirable thing, and especially so in Crustaceology ; since, judging from our periodicals, it is a much-neglected branch of investigation. In the present communication I purpose to lay before the readers of the 'Zoologist' a description of several Crustacea which I think will be found quite new to our Fauna. I have not hitherto been able to identify them with any species described by those authors which I have been able to consult, and am therefore unable to estimate their value in reference to the general subject. If known, they are neither described nor referred to by Bell ; and hence they become interesting to British Natural History. The first is a species of *Axius*, a genus composed but of one species, and that but of rare occurrence. Having had an opportunity of examining the recognized one, figured by Bell at page 228, I have been able to compare it with the one which I now suppose to be distinct.

Axius.

As the genus is one that rarely comes under observation, I may be allowed perhaps to quote its characters, as introductory to what may be said in comparison with the markings of the two species.

General characters. External antennæ nearly as long as the body ; the peduncle furnished above with a small moveable spine : internal antennæ with two setæ nearly as long as the carapace : external pedipalps rather slender, pediform, joints nearly of equal length : anterior

feet unequal, compressed, didactyle, the remaining pairs slender, compressed, simple (the fifth pair most slender and compressed): carapace much compressed, rounded above, the five intermediate of nearly equal length; the caudal joint elongate-triangular.

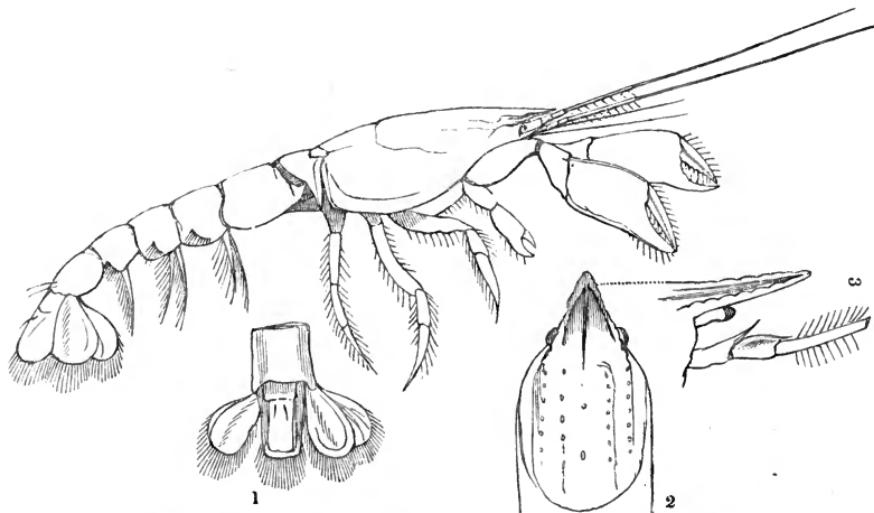
It will be observed from this definition that it is intended to be specific as well as generic; and this was not a matter of much importance while there was only one species. I would retain in the generic character the description of the external and internal antennæ, external pedipalps, anterior feet, and carapace, and degrade the remainder to specific importance only; and then the present species can be brought within the genus.

The specific character of *Axius stirynchus* I would, then, define as

Specific characters. Rostrum short, stout, elongate-triangular, having a raised granular margin, and a raised, central, longitudinal line; first ring of abdomen short; central caudal plate elongate-triangular: a row of spines on the external surface of hand.

And the species now under consideration as

Specific characters. Rostrum stout, short, elongate-triangular, with a raised festooned margin, and a raised, central, longitudinal line; first ring of the abdomen small, and on its anterior margin are two projections, which pass forward and join the posterior portion of the carapace: central caudal plate quadrangular.



AXIUS.—1. Posterior view of central caudal plate. 2. Dorsal view of snout. 3. Lateral view of snout.

This species in size and appearance very much resembles *A. stirynchus*. The carapace is large, deep and much compressed, especially towards the dorsum, where it almost becomes angular; but it is not

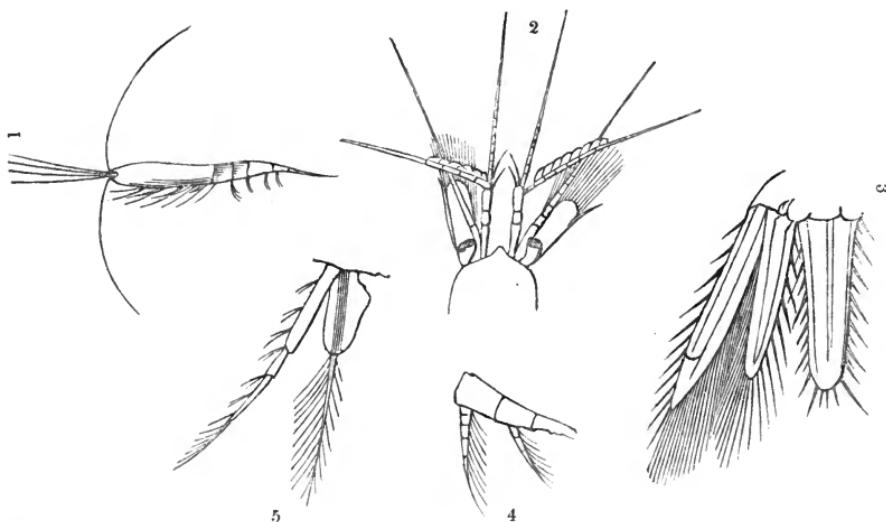
quite so deep as in *A. stirynchus*. The rostrum is short, stout and elongate-triangular, with an obtuse point; the margin is much raised, very distinctly lobulated, and there is a very prominently raised, central longitudinal line; between these lines the surface is much sunk. The external raised rostral lines run divergently backwards to the margin of the gastric region, where they alter their course, and pass posteriorly parallel to each other; midway between these and on either side of the median line are two other and shorter lines less prominently distinct. Along the inner margins of these are single rows of punctures, beside which are others scattered irregularly over the whole of the dorsal surface of the carapace. The first abdominal ring is much smaller than any of the others; the superior anterior margin is rendered concave by the projection forward of two articulating points, which meet two similar points from the posterior margin of the carapace; the remaining five rings are much larger, and more fully developed and natatory. The three middle annulations, or third, fourth and fifth, have each, on either side near the posterior and inferior angle, a tuft of stout setae. The middle caudal plate is quadrangular, with two stout spines on each side of the median line, near the upper and middle third. The second plate is also quadrangularly oval, with a row of spines running down the centre; the external one is similar to the second, but without spines, having only a ridge; all are fringed with long, closely arranged hair, as well as the central one, at their terminal margins. First pair of legs unequal, robust; the arm thicker anteriorly, twice as long as broad; wrist triangular; hand thick, with sides parallel to each other, smooth, unarmed; the fingers are short, strong, with a few stiff hairs, and the upper one is deeply grooved on its superior and external surface. The second pair of feet are didactyle, much compressed, and look very powerless; the arm is as long as wrist and hand, and very hirsute along the lower margin; the other feet get smaller posteriorly. The eye is small and is covered by the rostrum, beneath which it nestles; below, it is sheltered by the peduncle and spine of the antennæ; the whole forming a kind of quadrangular recess. The points of difference, then, between this and *A. stirynchus* are, that in this the rostrum is distinctly lobulated on its margin, that the hand is unarmed on every part, and that the upper and external surface of the moveable finger is deeply furrowed, which is not the case in the other. The peculiar way in which the first abdominal ring is attached to the carapace is very striking, and the ventral edge is quite pterygoid in its form. The posterior margin of the carapace seems, on a lateral view, to be quite

pointed in consequence of this form of articulation. The lateral tufts of setæ to the abdominal rings I never observed in *A. stirynchus*; but they are very apparent in this. The central caudal plate in this is quadrangular, while in *A. stirynchus* it is elongated-triangular. These alone are, I think, sufficient marks of variation to justify the idea of specific distinction.

MYSIS OBERON.

Specific characters. Rostrum obtusely triangular, reaching as far as the circumference of the cornea; middle caudal plate lanceolate; apex rounded, and the rounded portions armed with two diverging teeth.

Habitat. In sheltered pools, and margins of overhanging rocks near low-water mark, in August. Mount's Bay.



MYSIS OBERON.—1. Animal. 2. Dorsal view of rostrum, &c. 3. Caudal extremity. 4. Natatory appendages of abdomen. 5. Feet.

This elegant species is not very uncommon during the warm weather of August, and it is occasionally found in July if there is much sunshine and quiet. It is most commonly found in clear pools with rocky bottoms, and under overhanging rocks in the tide-way where there is great clearness of the water and no muddy soil. It is now more than two years ago since I first detected it, and ascertained what I consider to be its specific differences. At that time I thought it to be very rare; having, however, lately fished with coloured nets, it has proved to be much more common than was at first anticipated.

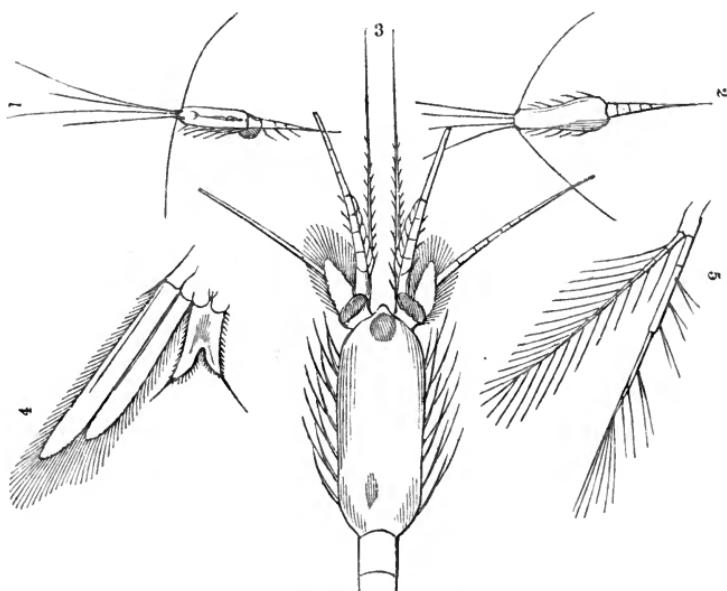
It is a perfectly translucent species, the large black eyes being the chief points by which it can be detected. It is very graceful in its movements, and, unless when much disturbed, it hovers very quietly and elegantly about and among the bunches of pendant sea-weed; but when disturbed it instantly seeks shelter either at the bottom or in some crevice. It is a small species, and, like all the others, has a very slender form. It varies from one-quarter to nearly an inch in length, and is of nearly equal diameter throughout. The carapace is very nearly two-thirds as long as the abdomen, and its sides are nearly parallel to each other and rather compressed. The rostrum is obtusely triangular, is as long as the peduncles of the eyes, and is stout and well marked. The eyes are rather large, and lie close on each side of the rostrum; they reach as far anteriorly as about the middle of the lower joint of the base of the internal antennæ. The internal antennæ are beneath the eyes, and between them and the rostrum; the lower of the basal joints is about twice as long as broad; the second is small, compressed and more or less globular; the third is slightly longer than it is wide, and the distal extremity is enlarged to allow of the articulation of the two terminal filaments, the external of which is the largest, and is ornamented on the median margin near the base with numerous flexible hairs, which bend in a semi-recumbent manner. The hairs on all the other parts are short and thinly scattered. On the internal angle of the base of the antennæ are one or two bunches of long setæ. The external antennæ are the largest and longest, and are situated below and a little externally to the internal ones. The terminal basal joint is about twice as long as the eye-stalk, and the terminal filament is about as long as the body of the creature. The antennal scale is large, extending beyond the basal joints; its internal edge is straight, and terminates anteriorly in a stout spine; the anterior margin is convex, and clothed with long hair closely arranged, which also extends along the inner margin. The abdomen is about one-third longer than the carapace, and gradually decreases in size to the caudal extremity. The middle plate of the tail is obtusely lanceolate; the apex is truncated, the angles rounded, and on each of these rounded portions is a large diverging spine, with a smaller one between. The external caudal plate is longer than the others, and at the external posterior margin there is a contraction, which is covered with short hair, while the remaining portions are clothed with long and closely arranged hair. The second plate is as long as the central one, and is also clothed or margined with long

hair; while the margins of the central plate are armed with long and short denticulations.

This species seems to approach in its characters to *Mysis vulgaris* and *M. Griffithsiæ* of Bell more nearly than to others; but it differs from both in having the apex of the central caudal plate truncated, and the rounded angles armed with two large and diverging spines, as well as in having the other margins armed alternately with large and small teeth. The rostrum is about the size of that of *M. vulgaris*, while the antennal scale is not more than half as long as in that species, as well as being wider and rounded anteriorly. Compared with *M. Griffithsiæ*, the rostrum is not more than half as long, while the antennal scale is longer and wider, and both have the external spine. From these considerations I am inclined to consider it as specifically distinct from both.

MYSIS LAMORNÆ.

Specific characters. Rostrum obtusely triangular; antennal scale reaching beyond the peduncle of the internal antennæ; the central caudal plate deeply bifurcated, and about half as long as the second.



MYSIS LAMORNÆ.—1. Lateral view. 2. Dorsal view. 3. Magnified dorsal view of rostrum, &c. 4. Caudal extremity. 5. Legs.

Habitat. Under overhanging rocks along the margin of the tide-way, near low water. Not uncommon. Mount's Bay.

This is the smallest and yet stoutest of all the species of *Mysis* with which I am acquainted. It is generally very easy of detection, by its being most commonly of a deep arterial blood-colour, especially towards the posterior portion of the carapace and in spots along the abdomen. All the specimens yet examined have been thus more or less marked; but yet colour alone can never, among Crustacea, be taken as confirmations of specific differences. It rarely exceeds three-fourths of an inch in length, though occasionally a few may be found rather more than this. It is a very light and active species, but much more quiet in its movements than the others. The carapace is wider in proportion to the abdomen than in *M. vulgaris* or *M. Chamelion*, and it is more enlarged posteriorly than in any of the other long-tailed Crustacea. The rostrum is prolonged into an obtuse, triangular snout, which is about one-third as long as the peduncle of the eye. The internal antennæ terminate in two multiarticulate filaments; the basal joints visible are three in number; the lowest is smallest; the second about twice as long as it is wide, and reaches as far as the peduncle of the eye; the third or terminal one is much compressed superiorly, and expanded for the articulation of the terminal filaments. The internal antennæ have two terminal filaments, and are long and large, and the upper part of the basal margin of the large filament is covered with reflected hairs; the second is shorter and stiff. The external antennæ are longer than the animal, and generally stand almost at right angles from the body. The antennal scale is long and obtusely triangular, the apex being rounded; the internal and external edges are both clothed with long, closely arranged hairs, and there is no spine on the anterior termination of the external margin. The abdomen is slightly longer than the carapace, and in some specimens about one-third longer. The central caudal plate is about half as long as the second and deeply bifurcated; its external margins are nearly straight, the internal slightly waved, and the whole marked with deep serrations; but at the external angle are two stouter teeth than the rest, diverging from one another. The two external plates are long, slender, rounded at their free extremities, and surrounded by long, closely arranged hairs.

The only British species with which this can be confounded is *Mysis Chamelion* of Bell; but there are, I think, sufficient marks of distinction in each to justify a separation into two species. In the one now under notice the antennal scale is not more than half as long as in *M. Chamelion*, and the distal margin is plain and obtusely triangular; while in *M. Chamelion* it is truncated, and armed with a long

spine externally. In the present species the central caudal plate is very short, not being more than half as long as the second plate, and the bifurcation is very deep; while in *M. Chamelion* the central plate is nearly as long as the second, and the bifurcation shallow. In addition to these, which I shall call the specific distinctions, there are numerous others of smaller importance, such as differences of proportions in different parts, which would be unappreciable in description; and these together have induced me to separate this into a specific position.

R. Q. COUCH.

Penzance, September 15, 1856.

Thesia Polita at the Isle of Herm.—This very rare crab, of which three specimens only are recorded by Bell as having been found in Great Britain, is occasionally taken in the Isle of Herm: it there occurs in sand at low water on the Long Beach.—*Alfred Merle Norman; Kibworth, September 3, 1856.*

Hippolyte Spinus off Oban.—I believe that this, the handsomest of the Hippolytes, is not scarce off Oban: I took a specimen the only day I ever dredged in that splendid locality, and have seen another which was taken there by Mr. Templer. It occurs in deep water, muddy bottom, between Kerreza and Mull, on the ground which is usually dredged for *Nucula decussata*, the white variety of *Turritella communis*, &c. *Crangon spinosus* occurred in the same locality.—*Id.*

Note on Comatula rosacea.—*Comatula rosacea*, the only British representative of the Crinoideans, is generally considered rare. I believe that this is an error: although nowhere abundant or gregarious, as many other star-fish are, it seems generally distributed all round our shores. The following list of localities, only gathered from Forbes, the 'Zoologist' of the last half-dozen years, and my own experience, will go some way to prove this:—

ENGLAND.—*Penzance; Falmouth; Budleigh-Salterton; Weymouth; Milford-Haven and other parts of Wales; Redcar.*

SCOTLAND.—*Firth of Clyde; Oban; Orkney; Shetland; Moray Firth.*

IRELAND.—*Irish Sea; Dublin; Cork; Strangford Lough; Down; Antrim.*

CHANNEL ISLES.—*Guernsey; Herm.*

The names printed in Italics are those of places in which I have myself taken the *Comatula*.—*Alfred Merle Norman; Kibworth, September 3, 1856.*

The 'Zoologist' Abroad.—“The editor of this zoological journal, E. Newman, contributes materially by its publication to the diffusion and advancement of Zoology among the English: this seems, indeed, to be much easier there than in Germany, since the spirit of nationality, which is so strong in England, promotes every patriotic effort; while in Germany the contrary is the case, with few exceptions. In England every collector, taking pleasure in communicating to others what he has found, there is none unwilling to consign to such a central organ as the journal above named what he has observed and what has occurred to him scientifically interesting. In Germany, on the other hand, we find such a reserve that the residents in the same spot are unaware, each of them, what his neighbour has observed and discovered; above all, it is with the greatest difficulty that even scientific men are persuaded to *write* a few lines on such matters, seeming to have an insuperable horror of seeing their names in print: if one in a hundred does take this step, each of these again has his own particular channel of publication, and all so unconnected that one knows nothing of the other. Till the unity of Germany in Science is practically understood, we shall have no right to speak of German Science, or to hope for a German Fauna, an object now immeasurably remote. Among the numerous essays in all branches of Zoology which this journal contains, we have been particularly pleased with the treatment of the ‘Entomological Botany’ in the late numbers, giving the plants with their inhabitants and visitors of all classes of insects, among which the Micro-Lepidoptera play the most conspicuous part. For twelve years past the numbers of this journal have appeared monthly with unfailing punctuality, and thus all possible individual and commercial notices, in any way connected with Zoology, are brought to the knowledge of the numerous readers of the ‘Zoologist.’”—Extracted from the German ‘Universal Natural History Journal,’ under the direction of the Isis Society of Dresden, New Series, Vol. i., 1855, p. 79. Contributed by Mr. Haliday.

Protest against Mr. Stainton's change of Names in the British Lepidoptera.—We, the undersigned, desire to express our sincere regret at the change of nomenclature adopted by Mr. Stainton in his, in many respects, useful and valuable ‘Manual of Entomology,’ as we think it calculated to create great confusion, and to mislead the beginner. We consider Mr. Doubleday’s ‘Synonymic List’ as decidedly the best systematic arrangement, and the one most generally adopted by a large majority of entomologists of the present day, and we cannot but think that thus tacitly to ignore its existence is greatly to be lamented. We wish it distinctly to be understood that our only motive in requesting the insertion of this protest is to call forth an expression of public opinion from entomologists in general.

C. R. Bree; Stricklands, Stowmarket.

Joseph Greene, M.A.; Playford, Ipswich.

H. Harpur Crewe, M.A.; Breadsall, near Derby.

Herbert Bree, M.A.; Woolverstone, Ipswich.

The Name of the ‘Substitute’.—Is it possible that Mr. Stainton really intends to give so incongruous a title as the ‘Substitute’ to the winter ‘Intelligencer?’ When I first saw the announcement I thought it must be a joke, and have since waited patiently for the solution, but two succeeding ‘Intelligencers’ having reiterated it, I begin to fear that he is serious, and cannot remain silent any longer. Now I want to ask him two questions:—1. What is it a substitute for? He will answer the ‘Intelligeneer.’ But they are one and the same thing: the ‘Substitute’ is to be rather larger, but the subject matter will be exactly the same; the ‘Substitute’ is to contain

lists of duplicates and desiderata, so did the 'Intelligencer'; the 'Substitute' is to contain notices of summer rambles, so did the 'Intelligencer.' As a substitute cannot be identically the same with that for which it is substituted, it appears clear to me that such a title will not do.—2. What has the title 'Substitute' to do with Entomology? I have always been led to suppose that the title of a book ought to have some slight connection with its contents, but how the terms Substitution and Entomology can have the most remote relation to each other, I am utterly at a loss to conceive; it cannot, therefore, be right to call a work entirely devoted to Entomology by a title which has no reference whatever to that Science. Mr. Stainton must really forgive me, but it seems to me to be mere pedantry to change the name at all: he says he has no time to edit the 'Intelligencer' during the winter, but nevertheless, with the assistance of others, he is able to bring out a periodical of a precisely similar nature, but which he proposes to call by a different name: his only apparent reason for doing so is that the winter periodical, not being entirely edited by himself, it is unworthy of the same designation as its more favoured predecessor. I have strong doubts whether such a reason will carry weight with entomologists in general. I do really hope that, between now and the 25th of October, Mr. Stainton will rack his brains, and if he must change the name, find something better than the one at present proposed. Let him call it what he likes, but pray do not let us have so silly (I cannot help saying it) and unmeaning a title as the 'Substitute.' Do let him "substitute" something else.—*H. Harpur Crewe; Shooter's Hill, Kent, September 22, 1856.*

Reply to some of Mr. Ashworth's Remarks in the 'Zoologist,' p. 5252.—"Indeed it is a strange disposed time, but men may construe things after their fashion, clean from the purpose of the things themselves," and thus make 'Much Ado about Nothing'—a 'Tempest' in a tea-pot—but, as 'All's Well that Ends Well,' even in a 'Comedy of Errors,' it can scarcely be 'Love's Labour Lost,' if we give and take 'Measure for Measure.' As I have not any desire to represent all the Lancashire entomologists, particularly not the small section of them who, like Mr. Ashworth, refuse to give any information, I take this opportunity to say so; neither have I overlooked "one or two considerations," but Mr. Ashworth does not seem to know that a generation ago Lancashire could boast of entomologists *great in their day*. Has he never heard of Hobson, Donbevand, Crozier, Townley, Tinker, &c. &c., who searched the moors and mosses before he was born, and to whom some of the present Lancashire entomologists are deeply indebted for directing their steps in "the way they should go?" My observations were never intended to "brag" over any one. We were solicited to give our information; and it so chanced that because we had more to tell than was expected from countrymen we were called "braggarts." If Mr. Ashworth will read the early part of my remarks again, he will then see what he ought to have observed at first, *viz.*, that it was intended as a reply to Mr. Stainton's erroneous statements, and to show other people that their remarks were incorrect; and, admitting that we did "brag," we, like Mr. Ashworth's "cousins," did a considerable amount of work. As to Fraxini being considered British, the Lancashire men knew, from the 'Zoologist' (Zool. 1515), that there was one specimen unquestionably British, because it had got into a certain cabinet; but they also know of several other specimens, not sea-coast specimens, which will never be considered British by some people, unless they have the good luck to fall into their hands. This feeling is not confined to the small section to which Mr. Ashworth belongs in Lancashire, but exists in other counties; and the only way to get a new or supposed scarce species admitted as British

is to distribute it amongst a certain clique or certain cliques, who habitually black-ball everything they do not possess. I know little and care less about the Dover Daplidices, but have seen a great many specimens said to have come from that, like Dr. Leach's Pinastri drawer, seemingly inexhaustible source. I do not often dispute a gentleman's word, neither do I doubt a countryman who knows so little of the value of an insect as to be proud to get a "quart o' ale" for a "flee," especially when several folks have had a race for the said "flee;" but I do sometimes doubt Daplidices, &c., when in the hands of dealers; at the same time, I feel proud to say we have dealers in Lancashire whose word needs no stamp. I rather like Mr. Ashworth's mock modesty, and can appreciate his advice to work hard, &c., and am quite aware he thinks the world wide enough for a great many to work in, always provided they do not work near him. Instance Mr. Carter, who went, last July, to see Mr. Ashworth, thinking, as Mr. Ashworth did not consider it any honour to find new species, he would be glad to give information how to take specimens; but no.

"When the devil was ill, a saint was he;
When the devil was well, the devil a saint he'd be."

Mr. Ashworth listened with great pleasure whilst Mr. Carter informed him how and where he had taken Lamprosetia Verhuelella near Mr. Ashworth's lodgings, and how the Lancashire entomologists found *Agrotis Ashworthii* at Llanferras; but when Mr. Carter asked him to tell how and where he took *Trochilium Scoliæforme* he distinctly said he would neither tell him nor any one else, saying, when pressed for a reason, that as his collection was very small he wanted them all for himself, for exchanging with. I am sorry Mr. Ashworth was away from books, &c.; but I shall be ready to reply to him, or any one he may induce to attack me, at any time, providing he or they will bring a direct charge; but I will not notice any side-wind remarks. I perhaps did wrong when I said *Scoliæforme* was common; but, having seen ten specimens in one cabinet, taken last year, I naturally concluded it was "bosh." In conclusion, I will ask Mr. Ashworth to name one local insect which he has known "made common for a year or two by dealers, and which has been scarce for a long time afterwards." There are few scarce insects in Lancashire, and those few are confined to localities where the Lancashire entomologists cannot go to, though perhaps Mr. Ashworth can.—*C. S. Gregson; Stanley, near Liverpool, September 15, 1856.*

[Although I believe it to be the most impolitic thing in the world for an Editor to interfere with the literary labours of his contributors, still I feel bound to arrest this passage of arms at the present point, because I have abundance of Natural-History communications on hand; and most of my readers will prefer these to writings which, however clever, do not advance that science. Mr. Gregson's communications are always welcome when he imparts information; and I hope, now that the 'Intelligencer' has hibernated, he will favour me every month with a record of his observations.—*E. N.*]

Extraordinary Abundance of Thecla Betulæ in Montgomeryshire.—In August last I captured a great number of *Thecla Betulæ*, which I found excessively abundant in the valley of the Dovey, Montgomeryshire. It had apparently departed from its usual habit, since by far the greater number were captured on the tops of oak trees, in company with *T. Quercus*; and, strange to say, the former were by far the most abundant. I found *T. Betulæ* the whole way up the valley of the river Dovey. Is not

this rather North for it? Having taken more than I need for my own collection, I shall be happy to supply any collectors in want of it. As I live in the South, any of our northern Lepidoptera will oblige.—*G. R. Crotch; Stoke Court, near Taunton, October 10, 1856.*

Larva of Cerura vinula.—I am not sufficiently acquainted with the literature of Entomology to know whether the structure of the caudal filaments of the puss moth, described by Mr. Gosse in the last number of the 'Zoologist' (Zool. 5254), be generally known or not, but I remember to have seen it more than fifty years ago, and many times since: it is, in fact, so familiar to me that I was surprised to find it now described as new. A tremulous motion which I have sometimes seen in this curious organ is not mentioned by Mr. Gosse, but is remarkable. The description given by Mr. Gosse is, like all his observations, very accurate and graphic.—*Thomas Bell; September, 1856.*

[Like Mr. Bell, I am perfectly acquainted with the facts noticed by Mr. Gosse, but I do not recollect their being previously noticed in the 'Zoologist,' and I think they cannot fail to please some of its readers.—*E. Newman.*]

Notodonta camelina double-brooded.—I have again, within the last fortnight, bred *Notodonta camelina* from eggs which I found upon birch the end of May, and am therefore still more confirmed in my belief that the insect is double-brooded. It appears to me that much too narrow a construction is put upon the term "double-brooded" by some of our best entomologists: I cannot admit, because only part of a spring brood of larvæ produce moths the same summer, but the remainder remain in pupæ till the following spring, that therefore the insect is only single-brooded. It seems to me that if any part of the spring brood of larvæ produce moths the same year, in time enough for the larvæ produced from them to be full-fed and spun up before the winter, that insect is most undoubtedly double-brooded. The fact of part, and perhaps the greater portion, of the brood remaining in the pupa till the following spring does not, in my opinion, make the least difference. I can conceive nothing more probable than what Mr. E. Shepherd relates of his brood of fifty *N. camelina*; but he must allow me to suggest that, had those dozen moths which emerged in August had the opportunity, they would doubtless have paired and laid eggs, the produce of which would have been full-fed in October or November. I really feel much indebted to Mr. Shepherd for his communication, as I consider it to be a valuable additional corroboration of my double-brooded theory. Mr. S. says that I dare not assert that *N. cucullina* and *carmelita* are double-brooded: he is quite right, as it is about the last thing which I should think of doing, and simply for this reason, that both my own experience and that of others has led me to form quite the contrary opinion. About the 9th of May, 1854, I was fortunate enough to find that a matrimonial alliance had taken place between a pair of *N. cucullina* and also of *N. ziczac* in my breeding-box, and on the 11th I had broods of eggs from both. They hatched about the same time, and the larvae were all full-fed and had spun up by the first week in July. The first ziczac came out of the pupa on the 16th of July, and this continued till every moth had emerged. Not a single cucullina appeared till the 1st of May in the following year, about the same time as those which I have been in the habit of rearing from larva taken in the wild state in September and October usually begin to appear. At the same time that I was rearing *N. cucullina* Mr. S. Stevens was rearing *N. carmelita* also from the egg, but though he tended them with the utmost care, and his larvæ, like mine, were full-fed and had spun up

considerably before the usual time, I think I am right in saying that not a single moth appeared till the following spring. We thus have *N. cucullina*, *N. carmelita*, *N. camelina* and *N. ziczac* treated in a precisely similar manner, and the very different result which occurred in the case of the two latter is to me a convincing proof that they are double-brooded, whilst the two former are as undoubtedly the contrary. It also appears to me to prove that confinement, abundant supply of food, and want of air and "exercise," have little or nothing to do with the question. I have several times bred *N. dictæa* and *N. dromedarius* in the beginning of the autumn from eggs or larvæ found the previous June or July; *N. dictæoides* I have not yet bred in the autumn, though I have had the larvæ full-fed in July, but the pupæ unfortunately died. I have within the last few days taken a specimen of *N. camelina*, and Mr. H. Cooke informs me that he has taken it several times towards the middle of August. The case seems to stand thus: the spring-laid eggs of *N. dictæa*, *N. dromedarius*, *N. ziczac* and *N. camelina* occasionally, if not always, produce moths at the end of the summer of the same year, and I have no doubt whatever in my own mind that this is a wise arrangement of Providence, by which, in case the season should be unfavourable to the maturity of the summer brood of larvæ, an autumnal brood is produced, which supplies the deficiency which would otherwise occur in the moths of the following spring.—*H. Harpur Crewe; Stricklands, Stowmarket, August 19, 1856.*

Double-broodedness of the Notodontæ.—In the last number of the 'Zoologist' (Zool. 5255) Mr. Naish "begs most distinctly to assert" that *Notodontæ dictæa* is double-brooded, and in proof thereof tells us that the Bristol collectors look for and find the perfect insect in May and at the end of July. Mr. Naish must allow me to observe that he has yet to prove that the moths which emerge in May are the parents of those found in July, in order to complete his chain of evidence. He adds, "we find them (*i. e.* the perfect insects) appear at two regularly stated times, and never between those times;" such may possibly be the case at Bristol, but, in the neighbourhood of London, specimens which assume the pupa-state in the autumn frequently do not emerge till the following July, and Mr. Naish does not produce the least evidence to contradict the supposition that his July specimens are produced from pupæ of the previous year, just the same as in this part of the country.—*E. Shepherd; September 5, 1856.*

Description of two Noctuina new to Britain.—

1. *Leucania vitellina*. Abdomen testaceous-white; the fore wings pale fulvous, with two waved transverse lines, a few points, and a discoidal spot all darker; hind wings nearly white. A very distinct species, first figured in Engramel's 'Papillons d'Europe,' 506, a, b. The following references may also be useful:—*Noctua vitellina*, *Hüb. Samml. Eur. Schmett. Not.* pl. 81, f. 379; pl. 128, f. 589. *Xanthia vitellina*, *Treit. Schmett. Eur.* v. 2, 356, 9; *Suppl.* x. 88. *Leucania vitellina*, *Dup. Hist. Nat. Lép. Fr.* vii. 475, pl. 130, f. 5. *Boisd. Ind. Méth.* 132, 1047. *Guen. Ann. Soc. Ent. Fr.* vi. *Noct.* i. 73, 92. *Noctua (Xanthia) vitellina*, *Meig. Syst. Besch. Eur Schmett.* iii. 160, 144, pl. 107, f. 15. *Aletia vitellina*, *Hüb. Verz. Schmett.* 239, 2371. This is well known as a native of Europe, and three European specimens are in the cabinet of the British Museum; the only English example has lately been captured at sugar by Mr. Henry Cooke, in his own garden, at Brighton.

2. *Laphygma exigua*. The fore wings somewhat ash-coloured, marked with transverse undulated lines; these are indistinct and paler than the ground-colour; there are

also several discoidal, testaceous, orbicular and reniform annuli: hind wings opaline, very sparingly clothed with scales. The genus *Laphygma* was first characterised in Guenée's 'Noctuelites,' vol. i. p. 156. Its characters are:—Body hardly stout. Proboscis rather short. Palpi stout, short, ascending; third joint very minute. Antennæ simple, slender, about half the length of the body. Abdomen hardly extending beyond the hind wings. Legs moderately stout; hind tibiæ with four long spurs. Fore wings rather narrow, straight in front, rounded at the tips, moderately oblique along the exterior border; second inferior ray nearer to the first than to the third; fourth moderately remote. Hind wings delicate, pearly, semihyaline. There are nine described species. The species *exigua* is well known as a native of the South of France, Italy and Dalmatia. There are four European specimens in the cabinet of the British Museum. The following synonyms may be useful:—*Noctua exigua*, *Hüb. Samml. Eur. Schmett. Noct. f. 362.* *Telmia exigua*, *Hüb. Verz. Schmett. 228, 2286.* *Caradrina exigua*, *Treit. Schmett. Eur. ii. 254; Suppl. x. 81.* *Dup. Hist. Nat. Lép. Fr. iii. 45, pl. 75.* *Boisd. Ind. Méth. 138, 1112.* *Guen. Ann. Soc. Ent. Fr. vi. 236.* *Herr.-Schäff. Eur. Schmett. ii. 212, 99; ii. Noct. pl. 66, f. 44.* *Laphygma exigua*, *Noct. i. 158, 252.* The first recorded British specimen of this insect was taken by Mr. Wallace, in the Isle of Wight; and a second has since been taken at Brighton, by Mr. Cooke.—*Edward Newman.*

Description of a British Noctua new to Science.—The beautiful insect described below is a female, and was taken some years since by Mr. C. S. Gregson in Liverpool, near the docks, and presented by him to me: it was, no doubt, accidentally imported. I do not think it properly belongs to the genus *Grammophora*, but, as it bears a closer resemblance to that genus than to any other, I place it there, rather than create a new one: it has much the appearance of a *Diphthera*, hence the name I have chosen for it.

GRAMMOPHORA DIPHTEROIDES.

Expansion of wings $1\frac{1}{4}$ inch: palpi recurved, nearly naked: antennæ simple: head small, with a whitish spot between the antennæ: thorax small, slate gray: body thin, tapering to a point from about the middle, of a gray-colour down the middle and white at the sides, appears to have had a dark crest at the base, but being rather wasted it is impossible to determine: wings white; first pair narrow: near the base is an irregular dark gray line across the wing, between which and the extra-basal line is a patch of deep slate-gray across the wing, broadest at the inner margin, with a waved transverse black line down the centre: costa slate-gray, with a triangular interrupted gray patch, the apex of which is produced between the stigmata and branches into three waved lines to the inner margin, a large patch of deep slate-gray at the tip, and another at the anal angle joined together by three waved lines: there is a small curved black line from the tip, and another near the anal angle: stigmata large, both formed by a gray line, the reniform one being clouded with gray in the centre: second pair glossy, margined with gray, with a central lunule: cilia white: nervures distinct.—*Nicholas Cooke; 6, Wentworth Street, Everton, near Liverpool, September 22, 1856.*

Economy of Halias Quercana.—About the middle of August, 1853, while beating for larvæ, I knocked a female *Halias Quercana* out of one of the oak trees; it was damaged a good deal: however, I always had a great fancy for *Quercana*, having bred the perfect insect several times from the larva, so I put it into a pill-box, and I did not look at it for two days after; when I did, I found that it had laid a great number of eggs, and, without exaggeration, they were the most beautiful I had ever

seen; they were marked all over, and covered with a gum to protect them from harm. What a beautiful provision of Nature! to see the parent protecting what was to be her future progeny from danger. Not knowing that this larva hibernated, I was thinking how I might take care of the eggs until spring, but, on looking into the box about eight days afterwards, I was surprised to see the young larvæ crawling about very rapidly: I collected as many as I could, and put them on an oak twig placed in a small phial of water, when they commenced to feed: they moulted the first time in about four days, the second time in ten days more, the third time in about three weeks afterwards, which was about the end of September; and, which is most remarkable, the larva, which is a beautiful green, turned to a brown, the colour of the bark of the trees, as if Nature ordained that the beautiful green would not suit the cold biting blasts of winter, but put on that colour to be in keeping with the season, and then, when the trees began to bud and flower, the beautiful green returned again. They made no winter nest, as some of the hibernating species do, but spun a strong kind of ladder or stage, where they stuck on, holding by their feet: after moulting the third time they ceased to eat, and continued in that state till the month of February, when I was very much surprised and disappointed by seeing them fall off one after the other until they were all dead.—*James McLaren; Worley Barracks, Brentwood, Essex, September 30, 1856.*

Descriptions of two British Tineadæ new to Science.—A new species of the genus *Gracilaria* was captured in a yew-wood, at Godeth, near Conway, North Wales, September 3rd, 1856, by myself and Mr. T. Hague.

GRACILARIA HAIGHII.

Expansion of wings from 3 to 4 lines; face pale; head yellowish; antennæ dark; thorax yellowish red; body dark; base of wing yellowish red, shaded off with dark grayish brown until the red is almost absorbed at the apex; cilia very dark. Under wings dark brown; cilia the same colour. When alive, and sometimes after death, the insect has a beautiful peach-like bloom upon it.

The *Tinea* described below seems to have bred freely amongst rubbish-sweepings in warehouses at Liverpool:—

TINEA NIGRIFOLDELLA.

Expansion of wings, ♂, 5 to 7 lines; head and face buffish gray, sometimes dark brownish gray; antennæ dark, very slender, generally as long as the under wings when expanded; thorax and abdomen buffish gray, lighter than the head and glossy; legs buff. Upper wings buffish gray, suffused with darker atoms, a distinct dark streak near the lower margin, then a long dark streak in the fold; above this, slightly outwards, is a small dark spot, then another small streak, after which there is another spot or streak; in some specimens between these dark marks the wing appears lighter by contrast; the outer margin is streaky, especially at the apex of the wing, sometimes these streaks are continued round, then there are three or four fine streaks on the outer edge of the costa. The inner margin is buff, broken by the darker base mark and by the dark fold streak; cilia grayish drab; under wings gray; cilia grayish drab.

♀ expands from 7 to 9 lines; eggs oval, white.

The general appearance of the insect is that of a *Plutella*, especially when alive: it sits close, and has the cilia well up. It is one our largest *Tineæ*.

This has been objected to as a British species, because it was found in foreign goods-warehouses; but the objection would apply with equal force to many of the genus *Tinea*, and our very commonest species would have to be expunged; but as I consider every species (whether imported at first or not) which locates itself here and propagates its kind to be British, I now add it to our list, merely remarking that those who do not think as I do are quite at liberty to refuse it admission to their cabinets until they change their minds, which they must eventually do.—*C. S. Gregson* ; *Stanley, near Liverpool, September 22, 1856.*

A Systematic List of Coleoptera found in the Vicinity of Alverstoke, South Hants. By ARTHUR ADAMS, Esq., F.L.S., Surgeon of H.M. Surveying Ship 'Actæon'; and WILLIAM BALFOUR BAIKIE, M.D., F.R.G.S., Haslar Hospital.

THE district to which the following paper refers extends from Alverstoke, as a centre, to a distance from four to five miles all round. During our acquaintance with it, comprising, at different times, a period of several years, we have collected a considerable number of species, many of them rare; and, being now on the eve of leaving England, we are desirous of recording the localities, for the benefit of itinerant entomologists, as well as of adding new *habitats* for several British insects. The country around Alverstoke is flat and rather low, and bounded along the South by the sea. The formation is the London clay, which stretches to the eastward as far as the chalky Portsdown Hill. The surface is remarkably free from stones and blocks, which, however desirable for the agriculturist, is not so favourable for the entomological collector.

The general arrangement we have adopted is that of Schaum's catalogue, several subdivisions being introduced for convenience of reference. The nomenclature of genera and species employed has been guided, as far as possible, by the law of priority: but, for the sake of those who are yet in the habit of using only Stephens' works, his names have generally been added. In comparing and arranging the synonymy we have derived much information and assistance from Dawson's standard 'Geodephaga Britannica,' and from Murray's model 'Catalogue of the Coleoptera of Scotland.'

GEODEPHAGA.

1. Fam. CICINDELIDÆ, *Leach.*1. Cicindela, *Linn.*

C. campestris, *Linn.*, *Steph.* Very abundant, especially during July and August, on the camp-ground behind Haslar, and along the cliffs at Hill-head. Frequents bright, sandy spots, flies in the sun, and runs with great celerity.

2. Fam. BRACHINIDÆ, *MacLeay.*1. Drypta, *Fabr.*

D. emarginata, *Fabr.* First captured in this locality, by one of the authors, in 1851. Solitary and not abundant, about damp, grassy banks and hedgerows, at Privet and Rowner. Sluggish by day, and apparently of crepuscular habits.

2. Demetrias, *Bon.*

D. atricapilla, *Linn.* Very common; in hedges and banks.

3. Dromius, *Bon.*

D. linearis, *Oliv.* Common; in banks and hedges.

D. agilis, *Fabr.*, *Steph.* *D. meridionalis*, *D. fenestratus*, *Steph.* Common; on hedgebanks.

D. quadrimaculatus, *Linn.* Not abundant; taken by Mrs. A. Adams under moss on elms in Rowner Copse.

D. melanocephalus, *Dej.* Rare; along banks of ditches at Privet.

4. Metabletus, *Schm.* *Dromius*, *Dawson*, *Steph.*

M. obscuro-guttatus, *Dufts.* *M. spilotus*, *M. impunctatus*, *Steph.* Local, but very abundant on hedge-banks at Privet, and along a ditch at Grange.

M. foveolus, *Gyll.*, *Steph.* Common; under stones.

5. Blechrus, *Motch.* *Dromius*, *Dawson*, *Steph.*

B. glabratus, *Dufts.* *B. femoralis*, *B. angustatus*, *B. maurus*, *Steph.* Common; under clods in ploughed fields.

3. Fam. SCARITIDÆ, *MacLeay*.1. *Clivina*, *Latr.*

C. fossor, *Linn.* Not common; found in mud of swamps at Stokes Bay.

C. collaris, *Herbst.* Not frequent; muddy bank of a ditch near Grange.

2. *Dyschirius*, *Panz.*

D. thoracicus, *Fabr.*, *Steph.* *D. arenosus*, *Steph.* Occasional; along the edges of a muddy ditch near Grange.

4. Fam. CARABIDÆ, *MacLeay*.1. *Carabus*, *Linn.*

C. catenulatus, *Scop.*, *Fabr.* Rather common; in fields.

C. monilis, *Fabr.*, *Steph.* *C. consitus*, *Steph.* Common; in fields.

C. granulatus, *Linn.* Rather abundant; in copses about Grange.

C. violaceus, *Linn.*, *Steph.* *C. purpurascens*, *C. exasperatus*, *Steph.* Very common; in fields and gardens.

C. nemoralis, *Müll.*, *Ill.*, *Steph.* *C. hortensis*, *Steph.* Common; in waste places and in gardens.

2. *Leistus*, *Fröhl.*

L. fulvibarbis, *Dej.*, *Steph.* *L. Janus*, *L. indentatus*, *Steph.* Rather abundant; under damp débris in hedgerows.

L. ferrugineus, *Linn.* Not unfrequent; under loose clods along hedges.

3. *Helobia*, *Leach*. *Nebrix*, *Dawson*.

H. brevicollis, *Fabr.*, *Steph.* *H. varicornis*, *H. lata*, *Steph.* Very common; under stones and logs.

5. Fam. ELAPHRIDÆ, *Steph.*!1. *Elaphrus*, *Fabr.*

E. cupreus, *Dufts.* Rather abundant; along muddy ditches at Grange.

2. *Notiophilus*, *Dum.*

N. aquaticus, *Linn.* Not abundant; under moss in marshy places near Stokes Bay.

N. palustris, *Dufts.* *N. tibialis*, *Steph.* Common ; hiding in damp hedgebanks.

N. semipunctatus, *Fabr.* *N. biguttatus*, *N. palustris*, *Steph.* Very common ; in dry banks. Runs quickly in the sun.

6. Fam. HARPALIDÆ, *MacLeay.*

1. *Panagæus*, *Latr.*

P. quadripustulatus, *Sturm.* One specimen taken near Fort Monkton, by Mr. Dawson, and another, by one of the authors, on the roadside at Browndown, in 1855.

2. *Loricera*, *Latr.*

L. pilicornis, *Fabr.* Very common ; under weeds and stones along sides of damp ditches.

3. *Chlaenius*, *Bon.*

C. vestitus, *Payk.*, *Fabr.* Not common ; along the banks of ponds near Stokes Bay.

C. nigricornis, *Fabr.*, *Steph.* *C. melanocornis*, *C. fulgidus*, *Steph.* A specimen taken by H. Adams, Esq., in a muddy ditch at Grange, September, 1855 ; and another captured by one of the authors in a field near Alverstoke, August, 1856.

Dinodes, *Bon.*

D. Maillei, *Dej.* An imperfect specimen taken by one of the authors, in the spring of 1851, at Fish-hook Bay, Isle of Wight.

4. *Oödes*, *Bon.*

O. Helopiooides, *Fabr.* Five specimens have been captured, four from decayed willow-pollards in Rowner swamp, and one under dead reeds in a ditch at Grange.

5. *Badister*, *Clairv.*

B. unipustulatus, *Bon.* *B. cephalotes*, *B. suturalis*, *Steph.* One specimen taken in June, 1855, under a log at Rowner.

B. bipustulatus, *Fabr.*, *Steph.* *B. microcephalus*, *B. lacertosus*, *Steph.* Not unfrequent ; under débris in dry ditches.

6. *Pristonychus*, *Dej.*

P. terricola, *Herbst.* (1794). *P. subcyanus*, *Ill.* (1801). Abundant in cellars at Haslar Hospital.

7. *Calathus, Bon.*

C. Cisteloides, Panz., Ill. Very common; under stones, logs and débris.

C. fuscus, Fabr., Steph. *C. rufangulus, Steph.* Not abundant; under stones along Stokes Bay.

C. mollis, Marsh. Under small heaps of dried sea-weed on Southsea Common.

C. melanocephalus, Linn., Steph. *C. apicalis, Steph.* Common; under stones in ditches.

8. *Synuchus, Gyll.* *Taphria, Bon.*

S. vivalis, Panz., Steph. Occasional; about grassy banks near Privet.

9. *Anchomenus, Bon.*

A. dorsalis, Müll. (1776). *A. prasinus, Thunb., Fabr., Steph.* Very abundant; among grass, and under débris along hedges and in ditches. Of gregarious habits.

A. pallipes, Fabr. (1787). *A. albipes, Fabr.* (1801), *Steph.* Tolerably common; under dead leaves in marshy places.

A. oblongus, Fabr. Occasional; under moss and dead leaves in copses near Rowner.

10. *Agonum, Bon.*

A. marginatum, Linn. Plentiful; under stones along damp margins of streams about Stokes Bay.

A. lave, Müll. (not *Steph.*) *A. parumpunctatum, Fabr., Steph.* Common; banks of moist ditches.

A. mœstum, Dufts. *A. afrm, A. versatum, A. lave, A. emarginatum, A. Bogemannii, Steph.* Under leaves in damp places in Rowner Copse; not unfrequent.

A. fuliginosum, Panz. *A. Simpsoni, A. pullum, A. striatum, A. pusillum, A. fuscipenne, A. gracile, A. 4-punctatum and A. piceum, Steph.* Tolerably abundant; under dead leaves in damp places in the copse at Rowner.

A. piceum, Linn. (not *Steph.*) *A. picipes, Steph.* Under damp leaves in Rowner Copse; in some abundance.

11. *Olisthopus, Dej.*

O. rotundatus, Payk., Steph. *O. rotundicollis, Steph.* Common; about roots of grass in damp woods at Rowner.

12. *Pœcilius, Bon.*

P. cupreus, Linn., var. *versicolor, Sturm., Steph.* Not common.

P. dimidiatus, Oliv. Two specimens; the first captured by Mr. C. Barron, on the camp-ground behind Haslar; and the other taken by one of the authors, in a wheat field at Frater, in 1854.

13. *Argutor, Meg.*

A. vernalis, Gyll., Dej., Steph. *A. unquinatus, Steph.* Common; under leaves in copses.

A. strenuus, Panz., Steph. *A. pullus, A. diligens, Steph.* Very common; under *débris* in copses.

14. *Omaseus, Zieg.*

O. melanarius, Ill., Steph. *O. affinis, O. sulcatus, Steph.* Common; under stones and clods.

O. nigrita, Fabr., Steph. *O. rufifemoratus, Steph.* Common; along damp ditches at Grange.

O. anthracinus, Ill. Rather abundant; under loose earth in damp places at Grange.

O. gracilis, Dej. *O. tetricus, O. rotundicollis, Steph.* Occasional; under moist dead leaves in Rowner Copse.

O. minor, Gyll. *O. lævigatus, O. anthracinus (Argutor), Steph.* Not common; under logs and stones.

15. *Steropus, Meg.*

S. madidus, Fabr., Steph. *S. arrogans, Steph.* Here, as elsewhere, one of the most numerous and widely diffused of Geodephaga.

16. *Abax, Bon.*

A. Striola, Fabr. Very common; under logs, stones and *débris*.

17. *Broscus, Panz.*

B. Cephalotes, Linn. *C. vulgaris, Bon., Dej.* Occasional along Hillhead beach; more abundant burrowing along the sandy coasts of Hayling Island; also on Southsea Common, under marine *rejectamenta*.

18. *Stomis, Clairv.*

S. pumicatus, Panz. Frequently found, though in small numbers, under sods and along boggy banks of ditches at Grange.

19. *Zabrus, Clairv.*

Z. piger, Fourc. *Z. gibbus, Fabr., Steph.* Several taken annually in fields, especially among wheat stubble, and along roadsides near Alverstoke.

20. *Amara, Bon.*

A. plebeia, Gyll., Steph. *A. nitida, Steph.* Common ; along roadsides.

A. similata, Gyll. Rather common ; dry, dusty paths.

A. trivialis, Gyll., Steph. *A. atra, Steph.* Very common ; roads and fields.

A. communis, Gyll. Abundant everywhere.

A. familiaris, Dufts., Steph. *A. cursor, A. lucida, A. laevis, Steph.* Tolerably abundant ; along fields, paths and roads.

A. tibialis, Payk. Less abundant ; roadsides.

21. *Bradytus, Steph.*

B. apricarius, Fabr., Steph. *B. torridus, Steph.* Very common ; in fields and along banks. Flies by night, occasionally in large numbers, through lighted windows.

22. *Anisodactylus, Dej.*

A. binotatus, Fabr., Steph. *A. rufitarsis (Harpalus), A. calceatus (Harpalus), Steph.* Not uncommon ; under loose turf at sides of ditches at Grange.

23. *Ophonus, Ziegl.*

O. sabulicola, Panz., Steph. A specimen taken, during the summer of 1853, by Dr. Power, near a hedgebank in Privet.

O. obscurus, Fabr., Steph. *O. stictus, Steph.* Rare ; under stones on sandy heaths.

O. azureus, Fabr. Rare ; under stones on heaths.

O. puncicollis, Payk., Steph. *O. foraminulosus, O. punctatissimus, O. puncticeps, Steph.* Rather rare ; under stones in dry situations.

O. obsoletus, Dej., Steph. Two specimens taken by one of the authors under *débris* in sandy spots on Southsea Common, September, 1856.

ARTHUR ADAMS.

WILLIAM BALFOUR BAIKIE.

(To be continued).

Haslar, September 22, 1856.

Carabus intricatus in Devonshire.—I had the pleasure of taking a specimen of this rare beetle on the 9th of the present month. I had been to the confines of Dartmoor, with a friend, collecting ferns; and on returning home through a wood I saw this beautiful insect trying to get through the grass on the edge of the pathway. One of the abdominal segments was severed, which lessened its locomotive power, almost depriving it of the power of moving; hence the capture. I have since hunted in the same place, but without success.—J. J. Reading; Plymouth, September 23, 1856.

Note on Localities for Agabus brunneus and Hydroporus opatrinus.—Two of our rarest water-beetles are *Agabus brunneus*, *Fab.*, and *Hydroporus opatrinus*, *Germ.*; probably only the rarest because their habits are peculiar or at present unknown. Like *Hydroporus Scalesianus*, they will ere long be in all our cabinets. I took both these species in Spain, in shallow, half-dried-up mountain streams, during the month of June last; *brunneus* was buried in thick masses of green filmy matter that here and there lay at the edges of the water; *opatrinus* more sparingly under stones and among gravel at the bottom of little pools. In looking for it I found the easiest mode, when practicable, to turn off the water into another channel, and then patiently watch and examine the wet stones and shingle; in a few minutes several species make their appearance, among them (sometimes among gravel three or four inches from the surface) is conspicuous the grand black *opatrinus*. I captured a few specimens in larger pools, by violently raking up the gravel at the bottom to the depth of several inches, and (when everything was in wild confusion and the water the colour of coffee) dipping with the net quickly and forcibly; generally, however, in collecting in such localities a net is of little service. Which of our coleopterists will this autumn test, as regards the existence there of these insects, the little rivulets of our British hills and mountains? This month, the commencement of autumn, is just the proper season; June, in the southern districts of Spain, is too late for summer collecting, and represents our September or October. Both species have occurred in England, and may again be found. I know of many streamlets in Wales and Scotland fulfilling all the conditions of these beautiful streamlets of Andalusia, their watercourse unsheltered by trees or brushwood, too high up in the mountains and too precipitous for trout, their beds of shingle interspersed with rocks, moss-grown, *Hydræna*-peopled, over which the tiny stream trickles into its miniature pool below. I should follow these rivulets far up into the hills, till the pools formed by them were no bigger than a basin; and there, or I am much mistaken, I should discover these long-lost species.—Hamlet Clark; Harmston Vicarage, September, 1856.

PROCEEDINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY.

September 1, 1856.—W. W. SAUNDERS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—‘The Journal of the Royal Agricultural Society of England,’ Vol. xvii.

Part I.; presented by the Society. 'Proceedings of the Zoological Society,' Nos. 299 to 309, both inclusive; by the Society. 'The Zoologist' for September; by the Editor. 'The Literary Gazette' for August; by the Editor. 'The Journal of the Society of Arts' for August; by the Society. 'The Entomologist's Weekly Intelligencer,' Nos. 19, 20, 21, 22; 'Manual of British Butterflies and Moths,' No. 7; by H. T. Stainton, Esq.

The late William Yarrell, Esq.

The President stated he had received intelligence that Mr. William Yarrell had died that morning suddenly at Yarmouth. Mr. Yarrell had been one of the original members of the Society, and soon after became its Treasurer, which office he resigned four years since, when our present estimable Treasurer succeeded him. Though not an entomologist, he had taken great interest in the Society: no man had done more for the Natural History of this country, and his loss would be severely felt.

Election of a Member.

Ernest Adams, Esq., of Great Camden Street, Camden Town, was balloted for and elected a Member of the Society.

Dr. Erichson's 'Naturgeschichte Deutschlands.'

Mr. Westwood remarked that, in the continuation of Dr. Erichson's 'Naturgeschichte Deutschlands,' to which he had briefly called attention at the last meeting, opinions were advanced which, if carried out, were likely to introduce great modifications in our views regarding species: very many recently made species have been therein sunk into local varieties, the principle identical with that enunciated in Mr. Wollaston's recent work having been applied to a much greater extent in the present than in any previous publication. He thought that entomologists would do well to consider how far these views are applicable to the Lepidoptera and other orders, as well as to the Coleoptera: if extended to the Micro-Lepidoptera, he had no doubt that the present enormous list of species would be reduced one half.

Exhibitions.

Mr. Edwin Shepherd exhibited, on behalf of Mr. E. Wallace, specimens of *Laphygma exigua* and *Botys silacealis*, taken this season in the Isle of Wight: he observed that Haworth's specimen of the latter species, the "Pyralis glabralis" of 'Lepidoptera Britannica,' was obtained by that author from Francillon's collection, and had for many years been placed amongst the reputed British species, the collection of Francillon having been considered a most doubtful authority: the last season, however, had furnished single examples of two of Francillon's doubted species, *viz.*, the present insect and *Trochilium chrysidiforme*, and several specimens of each had been captured during the present year.

Mr. Stevens said he had lately seen a specimen of *Laphygma exigua* in the collection of Mr. H. Cooke, taken at Worthing.

Mr. E. W. Janson exhibited the following Coleoptera, recently captured by him in the vicinity of Highgate:—

Dinarda Maerkelii, Kiesenw. Three specimens taken in a nest of the large wood-ant (*Formica rufa*), one on the 13th of July, the other two on the 24th ultimo. He remarked that the only previously known indigenous example of this insect is in the British Museum collection, and was taken by Dr. Leach many years since, it is said, near Swansea: this individual is admirably represented by Mr. Curtis (Brit. Ent. tab. 410), and is given by Mr. Stephens, in the 'Illustrations' and 'Manual,' under the specific appellation of *dentata, Grav.*, but Herr v. Kiesenwetter, long ago (Ent. Zeit. Stett. 1843), pointed out that the Gravenhorstian *dentata* (*Lomechusa*) was specifically distinct from the insect exhibited, and in this view all subsequent writers appear to coincide. British specimens of the true *dentata, Grav.*, had not come under Mr. Janson's notice.

Dendrophilus pygmæus, L. Two specimens, likewise an inhabitant of, and found on the 20th of July in, nests of *Formica rufa*. One other individual only of this insect is extant, he believed, in British cabinets, namely in that of our late respected honorary President, the Rev. W. Kirby, who applied to it the trivial name of *Sheppardi*, under which it has been beautifully figured by Mr. Curtis (Brit. Ent. tab. 131), and described in the works of Mr. Stephens. Dr. Anbé has likewise described and delineated it (*Annales de la Soc. Ent. de France, tome ii.*) as *Hister formicetorum, Sibi*. Dr. Erichson (Kaefer der Mark Brand), having before him a Swedish example, refers it without doubt to the *Hister pygmæus* of Linnæus, Paykull and Gyllenhal, remarking that "the descriptions of the two last-named writers being somewhat indefinite, it might well happen that such accurate entomologists as Aubé and Curtis failed to recognise it."

Dorcatoma rubens, Ent. Hefte, Steph. One specimen taken a day or two since in a decaying oak, and which, it would appear, was an extraordinarily precocious individual, as no others were to be found, although the larvæ, evidently about to assume the pupa state, were in abundance: on these he would bestow occasional attention, and hoped at no distant period to be able to furnish his friends with this species, whose allotted space in our cabinets had remained so long almost universally vacant.

Cryphalus binodus (Weber), Ratzeburg. Four specimens, both sexes, taken a day or two back in the bark of an aspen (*Populus tremula*). This genus (a dismemberment of *Bostrichus*), of which no member had hitherto been recorded as British, was erected by Dr. Erichson for the reception of those species in which the antennæ have the funiculus consisting of four articulations (in *Bostrichus*, as restricted by the same author, the funiculus is 5-jointed). For a beautifully characteristic figure of the male of this species, from the accurate pencil and graver of S. Weber, he referred the student to the first volume of Ratzeburg's 'Forst-Insecten,' tab. xiii. fig. 18.

Mr. Stevens stated that, amongst a quantity of plants lately received from Mr. Mason at Madeira, he had found several Lepidopterous larvæ, which had produced a species of *Plusia* allied to *P. Gamma*, and several specimens of a curious *Pyralis*, both of which he exhibited: he observed that no doubt many reputed British species had been brought into this country in a similar manner.

Mr. Hunter took this opportunity of stating that some doubts existed as to the claims of the specimen of *Eriopus Latreillii*, which he exhibited at the last meeting, to be considered a British insect; it was found on the outside of one of his breeding-cages, and as there was a quantity of foreign plants in the house at the time, it probably had

been imported therein: he certainly had had no larva bearing any resemblance to the descriptions given by Continental writers of that of *Eriopus Latreilli*.

Mr. Douglas exhibited, on behalf of Mr. Turner, an apparently new species of *Depressaria*, probably *D. Libanotidella*, taken near Newhaven, Sussex.

Mr. Newman sent for exhibition some curious Coccii, covered with a downy substance, found on grass at Darenth Wood.

Mr. Westwood had found an allied species at Walton: the insect exhibited by Mr. Newman appeared to him to be identical with, or very closely allied to *C. Festucæ*, described by M. Boyer de Fonscolombe in the 'Annales de la Société Entomologique de France,' 1854, pl. 3, f. 9.

Mr. Westwood stated he had received some curious masses of eggs, found on yew trees in Sir Walter Trevelyan's woods, in Northumberland: the masses were of the size of a large bean, and the eggs were arranged in transverse rows in gelatinous matter; some of these had hatched, and produced larvæ of a *Phryganea*. He observed that Kolenati, in his 'Genera et Species Trichopterorum,' makes no allusion to the deposition of the eggs of any species of *Phryganea* on the leaves of trees or out of the water; and Professor Pictet, in his 'Recherches pour servir à l'Histoire et à l'Anatomie des Phryganides,' merely observes, "Quelques auteurs en ont vu hors de l'eau, sur les feuilles des plantes mais je n'ai jamais trouvé dans cette position." The only author who appears to have made any observations upon the subject is De Geer, who has represented the masses of eggs and young larvæ of *Phryganea grandis* upon a leaf, and which appear to be identical with those which he had received. De Geer's observation has, however, been overlooked by most subsequent systematic writers upon these insects; Pictet, indeed, entirely omits *Phryganea grandis*, from not being a Swiss species, whilst Kolenati and Stephens, both of whom quote De Geer, omit all notice of this curious fact. Mr. Curtis, indeed, notices De Geer's observations of the deposition of the double masses of jelly inclosing the eggs of *P. grandis* upon sallow-leaves which hung over a stream, but adds an observation of Mr. Hyndman, of Belfast, in which the female *P. grandis* was seen to descend down the stem of an aquatic plant to the depth of a foot beneath the surface of the water, for the purpose of depositing its eggs; possibly the eggs now communicated may be those of a distinct species, as its habit of depositing its eggs out of water seems uniform: the masses of eggs were found not only on yew trees, but also on firs, as well as on the water dock. Mr. Westwood added that several years ago he had received precisely similar masses of eggs, found on the leaves of a tree at the same place.

Mr. Walker said that he had observed the common species of *Limnephilus* was especially partial to yew trees: the eggs in question might be of that species.

The President remarked on the vast quantities of *Phryganeæ* he had seen at Windermere during the recent hot weather.

The Rev. J. Greene sent for exhibition some varieties of Lepidoptera, including a singular orange-coloured specimen of *Cleora Lichenaria*.

Mr. Stevens exhibited living larvæ of *Macroglossa stellatarum*, taken near Deal; also living larvæ of *Agrotis Ashworthii*, about three weeks old, bred from eggs received from Wales.

Mr. Dutton exhibited a curious variety of *Argynnis Adippe*, taken in July last near Brockenhurst; also some rare Lepidoptera from the Isle of Wight, including *Heliothis armigera*, *Agrotis lunigera*, *Xylophasia sublustris*, &c.

Mr. Moore exhibited a box of Coleoptera and Hemiptera lately taken at Southend.

Mr. Walker observed that he had recently found *Aphodius rufipes* flying to a light at night; it was, he believed, the only night-flying species of the genus.

Mr. Douglas had also found *A. fessor* attracted by a light.

Mr. Stevens stated he had lately taken four or five specimens of *Helops pallida* at Deal.

Mr. Smith read a paper, by Mr. Frederick Bates, intituled "Description of a New Species of the Genus *Myrmecilla*."

October 6, 1856.—J. O. WESTWOOD, Esq., Vice-President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—'Proceedings of the Royal Society,' vol. viii. No. 22; presented by the Society. 'Mémoires de la Société de Physique et d'Histoire Naturelle de Genève,' Tome xiv. 1re Partie; by the Society. 'Exotic Butterflies,' Part XX; by W. W. Saunders, Esq., F.R.S. 'List of the Specimens of Lepidopterous Insects in the Collection of the British Museum,' Part VIII., Sphingidæ; by the Author, F. Walker, Esq., F.L.S. 'Revue et Magasin de Zoologie,' 1856, Nos. 6 and 7; by the Editor, M. F. E. Guérin-Méneville. 'The Zoolologist' for October; by the Editor. 'The Entomologist's Weekly Intelligencer' for 1856; the same work, Nos. 23, 24, 25 and 26; 'Elements of Entomology: an Outline of the Natural History and Classification of British Insects,' by W. S. Dallas, F.L.S.; 'A Manual of British Butterflies and Moths,' by H. T. Stainton; by H. T. Stainton, Esq. 'The Athenæum' for August and September; by the Editor. 'The Literary Gazette' for September; by the Editor. 'The Journal of the Society of Arts' for September; by the Society. 'Kritische Bemerkungen über M. S. Merian Metamorphoses Insectorum Surinamensium'; 'Untersuchungen über die Flügeltypen der Coleopteren'; by the Author, Dr. H. Burmeister. A box of minute Coleoptera from Ceylon; by Wm. Speuce, Esq., F.R.S.

Exhibitions.

Mr. Stevens exhibited a fine specimen of *Carabus intricatus*, which had lately been picked up dead near Plymouth; also a pair of *Monohammus Sutor*, found in an old ash tree near Yaxley, Hunts; and a bottle containing a quantity of liquorice powder, which, although the cork had not been taken out for five years, contained several living specimens of *Endrosis fenestrella*, the larvæ of which had evidently subsisted on the powder, and on the end of the cork inserted in the neck of the bottle.

Mr. Stevens also exhibited a box of beautiful Lepidoptera, chiefly minute species of Pyralidæ and Tineidæ, taken by Mr. Diggles at Moreton Bay. Many of these species were bred from the larva. (Mr. Stevens observed that Mr. Diggles, who is an artist by profession, would be happy to enter into engagements with any persons who might require drawings of the larvæ of any species bred by him.)

Mr. Stainton exhibited some cases, formed by the larvæ of various South Australian Lepidoptera, including curiously ribbed cases of a species of *Psyche*.

Mr. Lubbock exhibited some blind Gammari, from a well at Brighton. He observed that the eyes were absent or very rudimentary, as in *Niphargus spelæus*, from

which species, however, the present specimens appeared to differ in the form of the posterior legs. They are probably identical with *Gammarus subterraneus* of Leach. That naturalist, however, does not describe his specimens, and even suggests that they might be only the young of the common freshwater species, which is evidently not the case with those exhibited. The interesting fact of the presence of blind Amphipods has now been ascertained in four different localities in this country, *viz.*, London, Maidenhead, Bromley (in Kent), and Brighton, and would probably be found to be more common if those who observe them in their well-water would send them to this Society or to any naturalist.

Mr. Stainton exhibited some larvæ of Lepidoptera preserved in hermetically sealed glass tubes containing spirits, which had been forwarded to him by a glass-tube manufacturer in Hatton Garden, who, he stated, would be happy to exchange similar tubes for examples of British Lepidoptera.

Mr. Westwood stated he had lately received some curious pale varieties of the larvæ of *Acherontia Atropos*, similar to that figured in Fuessly's 'Archives.' It would be interesting to know whether that variety had occurred generally this season, and whether it was owing to any peculiarity in the food of the larvæ, or to the circumstance that the insect was near the period of its transformation, and had undergone a change in its colour.

Mr. Stainton remarked that several of his correspondents had taken the larvæ this autumn, but all appeared to be of the ordinary colours.

Mr. Dutton exhibited a curious variety of the female *Polyommatus Adonis*, having the under side very dark and the ordinary ocelli nearly obsolete. He stated that he lately noticed *Stenopteryx hybridalis* in great profusion on the cliffs at Eastbourne, although on the previous and following days not a single example was to be seen. He added that there was no perceptible atmospheric change during the three days to account for this circumstance.

Mr. Westwood brought for distribution amongst the members specimens of *Lophyrus rufus*. He had received a great quantity of larvæ from one locality, all of which produced females; from others, obtained near Weybridge, he had bred both sexes. He observed that these instances of the occurrence of one sex in insects were extremely interesting. It was a well-known fact that the queen bee at times only laid male eggs, which caused great derangement in the internal economy of the hive, and frequently the destruction of the stock. A correspondent of his had lately purchased some seeds of the *Wellingtonia gigantea*, from every one of which he had bred females of a Chalcideous insect of the genus *Callimome*, which evidently had been parasites of some Lepidopterous larvæ feeding in the seeds. Mr. Parfitt, of Exeter, had also only obtained females of the British ink-gall *Cynips*, from the galls which he had kept in order to obtain the perfect insects; he had also obtained a great number of females of the species of *Callimome* parasitic on the *Cynips*, and only a single male.

Mr. Westwood also brought for distribution specimens of the small honey-moth (*Achroea alvearia*). He stated that at the Trade Museum, formed in the spring of 1855, by the Society of Arts, he had exhibited two cases illustrative of the history of beneficial and injurious insects. The former contained numerous illustrations of the economy of the hive-bee, including various specimens of honeycomb, in one of which the eggs of *A. alvearia* must have been introduced, as recently nearly all the contents of the case had been devoured by the larvæ. It was interesting to notice that the

bodies of several queen bees were entirely, and those of the drones partially, exempted from the general destruction, doubtless owing to their containing no wax, whilst the bodies of the worker bees were devoured; also that a piece of bees' wax, which had been obtained by immersing the comb in boiling water, was scarcely touched. He added that the case also contained specimens of different species of Coccidæ, used both for dyeing and for the production of wax. The former had not been touched; but amongst the latter were some fine examples of the wax-insect of China (*Coccus Pela*); and in the inside of each specimen was a cocoon and pupa of the alvearia. Had these specimens and the empty pupa-case therein been found at a future time by any one ignorant of the circumstances, it might very naturally have been inferred that it was the pupa-case of some Lepidopterous insect parasitic on the *Coccus*. The larvæ had also burrowed deeply into the cork lining of the box; they seemed, however, to have avoided attacking newly developed worker bees, and also comb filled with honey.

Mr. Waterhouse stated, as an instance of the voracity of the larvæ of *A. alvearia*, that, having a number of them in a glass jar, on the top of which he placed a thick book, in a short time the larvæ ate completely through the book, and made their escape.

Mr. Moore exhibited specimens of *Lophyrus rufus*, reared by him from larvæ taken near Mickleham.

Mr. Westwood read a letter on the unusual scarcity of the May-fly this season, which had been addressed to him by the late Mr. Yarrell a short time previous to his death. He thought it probable the scarcity alluded to might be owing to the perfect insects having been developed, in the previous season, during wet weather, and thereby destroyed before depositing their eggs.

Mr. Shepherd exhibited, on behalf of Mr. Buxton, a series of specimens of *Noctua festiva*, taken in the North of Scotland, last summer. Some of these specimens, he remarked, approached very closely to the *Noctua confusa* of Iceland, which probably is only an extreme northern variety of *N. festiva*.

Mr. Westwood stated he had lately received from Mr. Parfitt a very small cornuted species of *Bledius*, which was evidently new to the British list. It had been taken beneath marine *rejectamenta* at Exmouth.

Mr. Stainton stated that Mr. Newnham had lately discovered the larva of *Hypomeuta vigintipunctatus* on *Sedum Telephium*, at Guildford; he (Mr. S.) had found the larva in a garden at Lewisham twenty years ago, on a plant of the *Sedum*, brought from the neighbourhood of Tunbridge Wells: this was the only previously known instance of the capture of the larva in this country.

Mr. Syme exhibited larvæ of *Deilephila Galii* preserved in spirits: he stated that he had recently captured several on the sand-hills near Deal. When young the larvæ are bright green, and very difficult to find; as they approach maturity they become olive-coloured: they appear to feed in the early morning, concealing themselves in the tufts of long grass during the rest of the day, and are then only to be traced by their excrement.

Mr. Smith observed that the specimens which he found at Deal last year were crawling in the warm sunshine.

Mr. E. W. Brayley remarked, with reference to the statement made by Mr. Dutton respecting the abundance of *Stenopteryx hybridalis* on one day and its nonoccurrence on the preceding or following ones, that such facts appeared to throw great light on

the circumstance alluded to by Mr. Westwood, in his 'Memoirs on Fossil Insects,' recently published by the Geological Society, of great masses of insects' remains being occasionally found in close juxtaposition, whilst in the immediately adjoining layers there were no such deposits. Another fact bearing on the same subject had been stated with regard to vast quantities of dead ants which had occurred along the shores of the rivers of South America, extending for many miles: these would naturally be covered with a layer of sand or other deposit, and it would be evident that the latter and all future layers would be destitute of insect remains until a fresh swarm of ants had been overtaken by the water, and washed up as before.

Mr. Westwood said it was interesting to observe that facts such as those noticed by Mr. Dutton, which at first sight seemed trivial, might possess considerable importance, and even occasionally afford a satisfactory solution to a great scientific question.

Mr. Frederick Smith read the following description of a most extraordinary aculeate Hymenopterous insect recently received from Australia:—

" **LAMPROCOLLETS BIPECTINATUS.**

" Black; the head punctured and shining; the face and cheeks clothed with hoary pubescence, distinctly plumose under a high power of the microscope; the mandibles ferruginous at their apex; the antennæ bipectinate, the pectinations irregularly toothed. Thorax shining and punctured, thinly clothed with hoary pubescence; wings hyaline and iridescent, the nervures rufo-testaceous; the claw-joint ferruginous; the calcariae pale testaceous. Abdomen sub-ovate, shining and finely punctured; the margins of the segments constricted; clothed above with a thin short hoary pubescence.

" Male. Length 4½ lines.

" Habitat: Australia. Taken by W. Stutchbury, between Sydney and Moreton.

" In the collection of the British Museum."

Preparation of the Larvæ of Lepidoptera.

Mr. Stainton read the following communication from Dr. Collingwood:—

" The preparation of the larvæ of Lepidopterous insects has long been a desideratum: while the imago requires but little management, being, with the exception of those that 'run greasy,' little prone to decay, the caterpillar form, on the other hand, being soft and juicy in the extreme, cannot possibly be preserved in our cabinets without undergoing some process, which, however effectually it may preserve it, as certainly destroys the symmetry of form and delicacy of colour of these perishable, though often beautiful subjects of entomological study.

" In my frequent visits to the Imperial Cabinet of Zoology at Vienna, I could not fail to be struck with the extremely beautiful preparations illustrative of the transformations of insects, exhibited in the upper story of that establishment. In glass cases suspended against the walls is a most instructive series of insects in every stage of their remarkable career, and preserved in a perfection of beauty I have nowhere seen paralleled. This series appeared to be very attractive, and was generally thronged with humble admirers, who probably saw, for the first time, and to their great astonishment, the various changes which insects undergo. But among the forms

thus preserved, the caterpillars were pre-eminent; their unchanged forms, delicate colours and characteristic attitudes, looking exactly like life.

“Thinking that British entomologists would be glad to be able to add to their collections similar specimens, I determined, before quitting Vienna, to learn the process by which they were prepared. Unfortunately, however, I found that the director, Herr Redtenbacher, to whom I looked for information, was absent; but this circumstance was, to a great extent, remedied by the kindness of my friend Dr. Ernst Brücke, Professor of Physiology in the University of Vienna, who, in a letter lately received, has given me the following information, derived from Herr Redtenbacher:—

“The caterpillars, he says, are eviscerated through the anus, and the skin is then blown out, being fixed upon a tube (‘man blöss sie an einen Tübülüs befestigt auf’), and carefully held all the while over a pan of hot coals, until they become quite dry, and are no longer liable to change their form. Caterpillars with peculiarly delicate colours, such as green or pale rose, are liable of course to lose their colours in this drying process. To replace them, a mass of wax, of the natural hue of the insect, is poured in through the opening by which it was eviscerated.

“The Professor adds, that the beauty of these preparations, as seen in the Imperial cabinet, depends less upon the nature of the method than upon the manual dexterity of the operator, assisted by long practice. I doubt not, however, that many members of the Entomological Society possess this dexterity to an extent quite great enough to produce specimens equal to those I have described, especially when the hope of enriching their cabinets has induced the practice necessary to the attainment of perfection.”—E. S.

Long-tailed Field-mouse.—The Rev. Gilbert White mentions having witnessed a female of this species travelling with her young attached to her teats. This anecdote always appeared to me extraordinary, and I had many times thought that the good old historian must have been mistaken; for, having seen many hundreds of nests, parent animals and their young, during the breeding-season, I had never met with a similar circumstance. But the historian of Selborne is probably correct. One day during the summer which is just passed I found a nest of this mouse in a clover-field which had just been mown. Upon disturbing the nest, the female made her escape, through the stems of the clover, having attached to her hinder parts (but whether to the fur or teats I cannot positively say, though I tried hard to ascertain) three young ones, about a third of her own size. The young were all close together, with their backs upward; and the four might have been mistaken for a single animal, or a large brown reptile trailing through the grass. The mouse, although thus encumbered, travelled with considerable speed, but scarcely so fast as it usually does. She showed much affection for her young; and when, having travelled many yards, the young became detached from her person she would not leave them, and could scarcely be frightened from the spot.—John Joseph Briggs; King's Newton, Derby.

Ornithology of Andalusia. By CAPTAIN WATKINS.

HAVING read with great interest the Rev. W. T. Bree's and the Rev. A. C. Smith's accounts of the Natural History of Switzerland, I venture to send the following imperfect account of the Ornithology of Andalusia, a province particularly rich in birds, from its proximity to Africa, hoping that some may find pleasure in reading it. I am myself much interested in Natural History, and have a goodly collection of birds, British and European, as also some five-and-twenty cases of American birds, obtained during three years' service with my regiment in Nova Scotia. I merely send a list of a few of the birds observed in the province, of most of which I was able to obtain specimens, and have now the pleasure of seeing them stuffed in my collection, recalling many pleasant scenes and happy hours spent in the wild and lovely province of Andalusia.

Common Vulture (*Vultur fulvus*). This magnificent and useful bird forms a striking feature in the Ornithology of this part of Spain: in the neighbourhood of Gibraltar they are very numerous, being seen at times in large flocks of from twenty-five to fifty, particularly where there is anything in the shape of a dead horse or cow in a state of decomposition. These birds form the scavengers of the country, and indeed of almost all hot climates; and when one views them soaring, with outspread wings, through the air, at times ascending until their large size appears no larger than a small hawk, and then descending in large circles until within gun-shot of the ground, knowing full well that their keen sense of smelling is guiding them unerringly to the spot where a savoury meal awaits them, one cannot but acknowledge the infinite wisdom of the Almighty, who has formed these birds, as well as every other living creature, each in its own sphere to be of service to man. I had the good luck to shoot a splendid specimen of this bird when out boar-hunting in the cork wood, bringing him down from a great height with a heavy charge of buck-shot: he was, when killed, I must own, a most repulsive-looking object (having lately breakfasted), a most offensive smell bearing ample testimony that he had not failed to do his part towards ridding the country of offensive matter. The wild and beautiful scenery of this part of Spain adds in no small degree to the pleasure of the Ornithologist. Who does not feel a thrill of pleasure as he views, for the first time, a strange bird, or recognizes an old acquaintance in some well-known bird of his own

dear island, amidst scenery which few—and certainly no naturalist—can contemplate without wonder and awe.

Egyptian Vulture (*Vultur percnopterus*). Occurs sparingly in this province. I have only seen two or three of these birds, and those alone. I know not whether it is gregarious where it is found in plenty, but here it seems a lover of solitude.

Merlin (*Falco aësalon*). This beautiful little hawk appears to be rare in this part of Spain: I have only once or twice observed it.

Kestrel (*Falco Tinnunculus*) and the Little Kestrel (*Falco Tinnunculoides*). Occur in great numbers: the latter is a most interesting little bird to watch. The north front of Gibraltar (where they breed) and the Neutral Ground between the British and Spanish lines, is in early spring swarming with this pretty little hawk, and it is most amusing to watch it hawking for locusts, which, I fancy, form a considerable part of its food: twenty or thirty together may be seen hovering a yard or two from the ground, and then settling to feast upon the locusts, which abound on the neutral ground. This province is most rich in Entomology: as early as the beginning of February the mountain-sides were enlivened by numerous Lepidoptera — *Colias Edusa*, *Papilio Machaon*, *Gonepteryx Rhamni* and *Cleopatra*, *Pieris Daplidice*, and many others flitting about in great profusion: the curious (and in Africa, I believe, still sacred) *Mantis religiosa* occurs also plentifully: a beautiful species of *Saturnia* is also very abundant.

Common Kite (*Falco milvus*) and Black Kite (*Falco ater*) are both plentiful. I possess one of each of these birds alive, which I brought with me from Seville: the black kite, the landlord of the "Forida Europa" assured me, was taken in the year 1855 from a nest in one of the domes of the cathedral. These birds, in their present domestic state, have a great *penchant* for vegetables and fruit. I have watched them often and often in my kitchen-garden plucking the pods of peas, and eating the contents: a bed of radishes also (which I was at a loss to conceive what had demolished) I one morning found occupied by my two pets, eagerly devouring them: they could not have been driven to it by hunger, as they were well supplied with birds and young rabbits. Since the figs and peaches have been ripe they have indulged most freely in their taste for fruit, nothing pleasing them better than a fig. I consider the fact of these birds feeding on vegetable matter worthy of note: other and far better ornithologists than myself will probably know whether similar instances are on record.

The Lordly Peregrine (*Falco peregrinus*) and the Marsh Harrier (*F. rufus*) are both very common. When out snipe-shooting I have always seen numbers of the latter hawking, beating their ground most systematically along the banks of the Guadalquivir: they are particularly numerous.

Others of the falcon tribe, according to Don Antonio Machado, in his 'Catalogo de las Aves Observadas in Algunas Provincias de Andalucia,' are commonly met with; among them the hobby, sparrow-hawk, goshawk, buzzard, roughlegged buzzard, &c.

Of Owls I only met with three varieties, though the above authority gives many others; among them the noble eagle owl (*Strix bubo*) I myself obtained, the little owl (*S. passerina*), S. Scops and Tengmalm's owl (*S. Tengmalmi*): the two first of these were common. M. Fevier, a French naturalist and a very good ornithologist, living at Tangier, in Africa, where I spent a few profitable hours, informed me that *Strix passerina*, S. Scops, and S. Tengmalmi were all common in Northern Africa: he had a large and valuable collection of skins, admirably prepared, with which he supplies many museums in Paris and other parts of France.

Raven (*Corvus corax*). This ill-omened bird breeds on the rock of Gibraltar: every morning, from the beginning of February to the middle of March, I used to see a pair flying over my house, uttering their croaking note.

The Jay (*Garrulus glandarius*). Occurs plentifully in the cork wood, where I have often seen and heard them, when out with the hounds. The woods and wilds of Andalusia echo to the sound of horn and hound, a pack being kept by the garrison of Gibraltar, which noble sport, two days in the week, formed our chief amusement, and many a good gallop you get with the Calpe hounds,—bringing back to memory many a gallant run over a far different country,—the fair plains of England. The Spaniards gaze on us with no small astonishment, as they behold us galloping most impossible-looking mountainsides, and firmly believe all Englishmen more or less mad.

The Blue Magpie (*Pica cyanea*) and Common Magpie (*P. caudata*) also occur in this province, though I have never met with the former.

The beautiful Roller (*Coracias garrula*) I once saw, though unfortunately I had no gun with me to make a specimen of him. I was intently fishing with the water-net for *Philhydrida*, and, on looking up, saw what at first appeared a patch of blue in a bush, but I was quickly undeceived by the beautiful bird leaving me to pursue my

study alone, and flying leisurely away. These birds are migratory here, arriving at the beginning of May, and leaving at the end of September or early in October.

The Golden Oriole (*Oriolus galbula*) arrives about the same time as the roller, and with it takes its departure. I have seen these birds once or twice only : I obtained a beautiful male and female from Fevier, of Tangier.

I only obtained one of the Shrikes (*Lanius rufus*), and saw no others. Don Machado gives *L. excubitor*, *L. meridionalis*, *L. Colurio* and *L. minor*, as visiting the province : I believe they are all migratory. *L. rufus* arrived about the end of March, about which time the nightingale arrived in great numbers, enlivening the cork wood with their strains : they must have arrived between the 21st and 29th of March, as I had not observed them previously, and I could not have failed to have done so had they been in the country.

The Hoopoe (*Upupa epops*) arrives in March, and is called the March cock, being exposed for sale in the Gibraltar market.

Bee-eater (*Merops apiaster*). First and foremost among the birds of Andalusia must rank the gay and lovely bee-eater : it arrives early in April. I had a good opportunity of judging, as I saw large flocks of from twenty to fifty crossing the Straits of Gibraltar from Africa, and shot two specimens as I was standing on the sands. As soon as they were clear of the sea their clear, shrill note was audible, long before the birds themselves were visible : they fly and hawk for flies much after the manner of swallows, uttering incessantly their wild, clear note. On one occasion I stood under the shade of a large cork tree, and watched some twenty of them hawking in a different manner than usual : they were perched on the summit of a large tree, and would fly a little distance, poising themselves on the wing, after the manner of the fly-catchers, taking their food, and again returning to the spot : I obtained as many specimens as I required, and of course shot no more, having a great reluctance to destroy any bird wantonly. In May, when going up the Guadalquivir to Seville, these birds were breeding in hundreds in the sand-banks overhanging the river : it was most interesting to watch them flying in and out of the holes, like sand martins. I should much have enjoyed landing for an hour, and procuring some of their eggs, but of course that was out of the question.

The Crossbill (*Loxia curvirostra*) inhabits this part of Spain. A flock used to frequent my garden, feeding on the fruit of the Arbor Vitæ : they were exceedingly tame, and I had a good opportunity of

watching their habits. As it was against garrison orders to shoot on the rock, I had recourse to a small rat-trap to procure a specimen, carefully concealing it in the foliage, and placing a cone of the Arbor Vitæ upon it: I had the satisfaction to be rewarded for my trouble with a fine female specimen: I never, however, caught another, although the birds returned to their food, and were constantly in the tree.

The Common Robin (*Turdus migratorius*) [? Ed.] spends the winter in Andalusia. I had two or three in my garden all the winter months, but on the approach of hot weather they disappeared, and I never saw one anywhere after the end of March. I was informed by a friend at Gibraltar that at Malta the robin arrives regularly for the winter months in great numbers, but migrates again on the approach of the hot weather, which dries and parches everything, so that they would be unable easily to obtain their food. During the winter the climate affords them abundant sustenance.

In the same manner the Kingfisher winters in this province, but I never saw it during the summer, although I have frequently passed its winter haunts.

I could add many more birds to my list; perhaps at some future date, should this prove acceptable, I may venture to send another communication.

C. W. WATKINS.

October, 1856.

Notes on Birds in Germany. By HENRY SMURTHWAITE, Esq.

HAVING lately passed some time in a district of Germany, where I had many opportunities of observing the habits of some rather rare British birds, a short notice of the most interesting of these may perhaps prove acceptable to the numerous readers of the 'Zoologist.'

The town in which I have been residing is Reuss Greiz, the capital of a small principality on the borders of Saxony, and during my stay there I have daily seen great numbers of the white wagtail (*Motacilla alba*). These pretty and graceful birds were to be seen at all hours in the immediate vicinity of the town, and during the last month (September) in surprising numbers. A small stream of muddy water ran through the principal streets of Greiz, and emptied itself into the river Elster; at the junction of the two several pairs were always to be seen

flitting to and fro, and occasionally stopping to take a bath in the far from inviting-looking water. I frequently also saw them perched on the roofs of many of the houses, and the church-leads were always occupied by four or five, who appeared to live in the greatest harmony with the sparrows and martins. I invariably, however, observed them in greatest abundance in the large open fields of barley (the chief haunt also of the ortolan bunting), at a considerable distance from any water. From their movements and cries I am convinced that many of them had nests with young (the time of which I speak was the second week in August) in these very fields, and as the ground was a dead level, the nests must have been placed, like those of the larks and buntings, under the shelter of some clod of earth, &c. Now it is well known that our own Ray's wagtail will frequently build in a similar situation, and possibly the pied wagtail also; but this peculiarity has never, to my knowledge, been previously remarked in *M. alba*. I questioned the country people on this point, and their evidence concurred with the notion I had formed; in fact, I feel convinced that, were proper search made in the breeding-season, more nests of this species would be found in the open fields than in any other locality. I had not time to make a protracted search for the nests, and I regretted this the more because the discovery even of a single one in such a locality would have gone far to prove that it was the situation most frequently chosen; and although I am satisfied, beyond a shadow of doubt, that the nests did exist, yet, as they remained undiscovered, the chain of evidence rests incomplete. I am in great hope, however, that as British naturalists who devote themselves especially to the study of Oology are becoming annually more numerous and persevering in their Continental investigations, this point and many others connected with the Motacillidæ will be soon satisfactorily explained. No family of birds demand more attention than the wagtails: I feel sure that our five British species are by no means properly understood, and if the labours of future ornithologists were to bring to light the fact of our possessing more species than is at present supposed, it would be the realization of an idea which I have formed since I have had so many opportunities of observing these beautiful and interesting birds in Germany.

The Pied Wagtail also occurred in the neighbourhood of Griez, but, compared with *M. alba*, was rare, and appeared confined to a particular locality: the last-named species is doubtless double-brooded, for early in August there were plenty of young birds able to take care of themselves.

I once or twice saw the Grayheaded Wagtail (*M. flava*), but it was decidedly scarce; the country, in fact, was not well suited to its habits, as there was a total absence of marshy ground, in which it seems particularly to delight.

Many naturalists have spoken of the difficulty of "beating up" the feathered population of the Continental states. I think it is Mr. Wolley who mentions this with regard to Lapland: many also have remarked the great scarcity of small birds in Germany: to a certain extent this is doubtless true, but at the same time great caution should be used in stating positively that certain species are rare or unknown in particular districts: for more than a month after my arrival in Greiz I sought the black redstart (*Sylvia tithys*) in vain, and it was not until put on the right scent by a gentleman in the town that I discovered how abundant it really was.

Every one who has travelled through the central part of Germany must have observed in each field a small wooden building, somewhat loosely constructed, and answering the double purpose of barn and stable. These are the great haunts of the black redstart, and in the breeding-season scarcely one of them is without its pair of birds, and during the whole year they affect more or less the same situation. On discovering this fact I had no difficulty in seeing as many specimens as I desired, and in the course of five minutes I have frequently observed ten or twelve of this attractive species, chiefly females or young males of the year, but the old males were also often to be seen, and a handsomer bird it would be difficult to find. They remain for hours together perched on some particular point of the roof of these barns, occasionally leaving their station for a few moments in pursuit of insects, but invariably returning to the same spot. They were, however, somewhat shy, and the instant they became conscious of the presence of man either entered the building through one of the numerous crevices, or flew to a distant part of the field. They are also double-brooded, and, as my friend Mr. Müller informed me, frequently lay in the first nest eight eggs, but in the second never more than five. The common redstart I also observed now and then, but it was not abundant: by the country people it is called "wood redstart," and *S. Tithys* "house redstart," the last-named sharing with the swallow and golden crest the favour of the kindly disposed and fanciful peasantry.

Another very interesting bird, which I often watched with great pleasure, was the crested tit (*Parus cristatus*). They were always to be seen amidst the branches of a small plantation of fir and birch

trees about half a mile from Greiz, usually in company with the long-tailed tit and golden-crested regulus. It was a species well known to the country people, and, as I found on inquiry, existed in great numbers in all the surrounding woods, preferring, however, those composed of fir trees. Like its congeners, it was active and sprightly in the extreme, but by no means shared their familiarity, as I never succeeded in approaching nearer to it than ten or a dozen yards. In this district it remains the whole year. The nests, however, are but seldom found.

HENRY SMURTHWAITE.

October 5, 1856.

Occurrence of the Honey Buzzard near Penzance.—A third example of the honey buzzard has been captured, during the last week, in Cornwall, and within a couple of miles westward of Penzance, in a wooded valley. It has altogether the appearance of being a bird of the year, from the dark colour of the iris, the shortness of the tail-feathers, the shorter and straighter character of the claws than any I have yet seen, and from the yellow colour pervading the base of the lower mandible, and the skin forming the boundaries of the gape. The whole of the head, cheeks (including the small, closely-set feathers between the beak and eye), and the upper plumage is of a uniform dark chocolate-brown; this colour is a little broken on the nape of the neck. The under parts from the throat to the vent is bright rufous-brown, lighter in tone than the upper parts, each feather having a very well-defined dark line down the shaft; but there is not the slightest appearance of transverse bars, spots, or broken patches of white on the breast or belly; the throat is rather lighter than the rest, and here the centre dark line is of course more distinct and defined. The colour of the iris is reddish brown, giving indications of becoming yellow at a more mature age. Legs bright yellow. The three distinct straight bars, at intervals of about three inches, across the *under* surface of the tail seems to be another character peculiar to this species, which neither the common buzzard nor the rough-legged buzzard possess. These bars, being very well developed in the present specimen, as well as in those of a maturer age that I have examined, may be regarded as a permanent character of the genus *Pernis*. This bird was observed for some days in the valley, and was marked at last to the top of a tree adjoining an orchard. From this spot the bird made a sudden stoop at a cat on a bank. The conflict continued vigorously for a few minutes, the honey buzzard attacking the cat in the style of a fighting cock, and the cat parrying off each assault with her paws, and with a tail and crest looking as formidable as in any caterwauling encounter on a house-top.—*Edward Hearle Rodd; Penzance, October 20, 1856.*

Occurrence of the Rose-coloured Pastor and Hoopoe in Essex.—The rose-coloured pastor was shot at Street-hall, in Essex, about the middle of the month of September last. It is a very fine specimen, with a good crest, and the beautiful rose-colour on the back, &c., very pure. The hoopoe was shot at Ashdon, near Saffron Walden, about a week afterwards. Both these birds are at Mr. Travis's bird-stuffer, Saffron

Walden, Essex. I beg also to notice a very singular variety of the skylark's eggs, which I have in my collection. They are quite white, with the exception of one or two dots and streaks of a light brown colour. A skylark's nest was found here last spring, containing eggs, the ground-colour of which was much lighter than usual. This nest was taken. I have no doubt that the same bird made another nest, and laid these eggs, as they were found near the same place as the former, and not long afterwards.—*Edward J. Tuck; Wallington, near Baldock, Herts, October 11, 1856.*

Occurrence of the Rose-coloured Pastor, Merlin and Peregrine in Norfolk.—A fine old male of the rose pastor, with its rich salmon tinge and black crest, was killed on the 9th inst. at Hunstanton; and a very beautiful specimen of the adult merlin, a species of hawk extremely rare in this district, was obtained in the county about the same time. A female peregrine, in immature plumage, was shot in a wood at Sprowston, near Norwich, this week. A pair had been seen in the neighbourhood for some days previously; but the other, probably the male bird, has not yet been procured.—*H. Stevenson; Norwich, October 15, 1856.*

Scarcity of the Song Thrush.—Mr. Edward, of Banff, referring to the great and almost total destruction of the song thrush in the North, remarks (Zool. 5261), “The other winter it suffered severely here, scarcely one being left.” Although perhaps a somewhat less enthusiastic admirer of the mavis than Mr. Edward, who gives it the preference to and ranks it above the blackcap, I can fully sympathize with him in deplored the loss of so many of our sweetest native songsters; and can, moreover, in corroboration of his statement of what has occurred in the North, give a few extracts from my note-book of what fell under my own observation in the South during the severe winter alluded to:—“February 2, 1855.—The frost still continues with unabated severity, and, the ground being covered with snow, all the smaller kinds of birds have in consequence suffered much, not excepting the house sparrow, one of the hardiest of the feathered tribe. As for the thrushes, they look pinched beyond measure, and seem to be in a complete state of collapse. One solitary, wretched, half-starved bird I observed most perseveringly employed in endeavouring to break a snail-shell, raising it on high and then striking it on the ground, or rather trying to do so, for its strokes proved powerless and futile, the intensity of the cold having not only quite paralyzed its strength, but rendered it helpless and half demented; for so tenacious was it of its fancied prize (for it proved to be nothing more nor less than an empty shell) that in slowly flitting away it would not forsake or relinquish the worthless object, to which it clung as if its existence was staked, or depended on the breaking of this shell.” “February 15.—The weather is more intensely severe than ever; and should the snow-storm continue it is much to be feared that most of the thrushes, as well as robins, must inevitably perish of cold or starvation, to say nothing of the numbers that are falling daily under the murderous fire of the men and boys (now thrown out of work, who pursue and persecute them morning, noon and night.” “March 27, —The weather is still so cold, with occasional frosts at night, that, although the season is so far advanced, I do not believe many birds have yet commenced the construction of their nests; for at four o'clock this afternoon I observed a number of blackbirds and a few thrushes feeding together in a meadow in this neighbourhood, a proof of the extreme severity of the spring, as in ordinary seasons they would not only have been paired, but busy with their nests, or even sitting on their eggs or rearing their broods; for I have heard of a thrush's nest being found at Bonchurch, with four eggs in, as early as the 28th of February; but this year, with the exception of ivy, they

would find little or no foliage to screen their nests from observation or shelter them from the storm."—*Henry W. Hadfield; Ventnor, Isle of Wight, October 4, 1856.*

A young Spoonbill shot at Shoreham.—A young male specimen of the white spoonbill (*Platalea Leucorodia*) was shot at Shoreham, Sussex, near the railway bridge over the Adur, on the 5th of last September. It appears to be a very young bird, the length of the bill being only $4\frac{1}{4}$ inches, while that of an adult bird is $8\frac{1}{2}$ inches. The occipital feathers are very short, there being no crest; and there are none of the buff markings about the breast and neck which are seen in the adult bird; there is also no convolution of the trachea within the keel of the sternum. Its gizzard was filled with shrimps and the roots of marine plants.—*Arthur Woodroffe; 125, Eastern Road, Brighton, October 13, 1856.*

Pelican found dead on the Coast of Durham.—On the 25th of last month a lady picked up, among some rocks on the shore at Castle Eden, a mutilated adult specimen of this bird, in full plumage. The carcase, which is now in my possession, had been much eaten, and had apparently been tossing about for about a fortnight, and the head was altogether destroyed; but enough remained to show it had been a very fine bird. Whether it had wandered alone and perished at sea, or made its escape from some passing vessel, I leave to others to conjecture. I am not aware that this bird has ever been taken in any part of Northern Europe.—*H. B. Tristram; Castle Eden, Durham, September 10, 1856.*

Occurrence of the Eared Grebe in Flintshire.—On the 27th of September a young male of this bird was shot at Bagillt, in Flintshire. I observed it swimming in a pool by the side of the railway, during a perfect hurricane of wind and rain. It did not attempt to fly away even when two trains passed it, having probably had a rough night of it. Not having a gun at hand, I sent a man after it who had, and he very soon brought it to me. It has a decided, though slight, upward curve in the beak which marks it as the above species. I should mention that the railway here runs along the shore of the estuary of the Dee.—*Alfred O. Walker; Chester, October 22, 1856.*

Do Cuckoos take the Eggs of other Birds as Food?
By Wm. H. SLANEY, Esq.

THE great quantity of these welcome birds which frequent this place and breed here during the early summer months, and the observations I have been enabled to make on them, induce me to submit the above question for the consideration of your numerous correspondents, with the following remarks on the subject.

In many counties it is become almost proverbial that cuckoos *suck* and destroy other birds' eggs, although there appears no good reason for imputing this fault to the pretty cuckoo, at least as far as I have had opportunities of observing their habits. In Lancashire this propensity is firmly believed in by the lower class almost universally;

and the motive adduced is, that it is to strengthen and clear the voice of the cuckoo, and enable it to sing the better; but this effect may be fairly doubted, as it is seldom that even our own most talented songstresses resort to this means of adding to the sweetness of their song, though lozenges and other stronger stimulants may be sometimes adopted by them for that purpose.

That cuckoos do cause the destruction of the eggs of many of the smaller birds there can be no doubt, but not for the above-mentioned reason, nor as food. When the cuckoo's egg is found together with other eggs, it is a well-known fact that no sooner is the former hatched than the young cuckoo takes upon itself, as its first labour in life, to throw overboard those unhatched eggs of the poor bird which brought it into existence; and if there chance to be any foster-brothers or sisters hatched at the same time out they must go, and are ejected likewise, as soon as the young cuckoo is strong enough to do so, in order that the young intruder may have the whole nest to itself, and the incessant attention of the two old birds to feed and provide for it alone, a labour and difficulty they are scarcely able to accomplish; and their own young ones, or the eggs, are to be found dead or broken beneath the nest, till removed by vermin or some other means. Thus may the cuckoo be considered as a destroyer of other birds' eggs. But is there any authenticated account of cuckoos *sucking* or *swallowing* the eggs? Numbers of wood pigeons' broken eggs and egg-shells are constantly to be found on the ground in places much frequented by those birds, and, being quite white, are easily seen. Gamekeepers and others often impute this to the poor cuckoo having sucked them; but those eggs, in most instances, upon being examined, will be found to have been duly hatched, or by accident to have been blown or to have fallen out of the very shallow and inartificial nest of the wood pigeon, consisting of only a few twigs or bits of stick placed together, and with very little or no depth to it. It is also well known that the cuckoo in general, except the young ones of the season, have left this country by the beginning of July, and the others a short time later; and that the old birds arrive here about the middle of April, according to the nature of the weather and season. Now, before and after these two periods the eggs of the wood pigeon, which breeds quite early in the spring, as well as in the summer and autumn months, are constantly found emptied of their contents, and laying near the nest, at a time when there are no cuckoos left to molest them; and when a wood pigeon's or other bird's nest has been robbed it is ten times

out of twelve a jackdaw, magpie, crow, or jay that has done it, who are ever on the look-out for that purpose, and are most dexterous at such work, and may easily be caught in traps baited with an egg.

Another reason for supposing cuckoos are not addicted to plundering other birds' nests of their eggs for food, though so often accused of it, is that eggs unquestionably are not their *natural* food, but grubs and insects, especially caterpillars and winged beetles; neither are house-ducks' and the larger kinds of birds' nests often supposed to be attacked by cuckoos. That the cuckoo always lays its egg in an insect-feeding bird's-nest, in order that the young one may obtain its proper and natural kind of food, is a strong reason in support of the old ones not changing their diet in after days. It is true that Shakespeare mentions,

* * * *

"As that ungentle gull, the cuckoo's bird,
Useth the *sparrow*: did oppress our nest."

And Dr. Johnson, in a note to the above quotation, states that "the cuckoo's chicken, who, being hatched and fed by the sparrow in whose nest the cuckoo's egg was laid, grows in time able to devour its nurse." Now, the sparrow can hardly be called an exclusively insect-feeding bird, if, as is probable, the common house sparrow is alluded to by Shakespeare, but in whose nest a cuckoo's egg has, I believe, never yet been discovered, though it is found often in that of the hedgesparrow, which is quite a different kind of bird from the other; and although, in an elaborate article in a recently published magazine, much pains are taken to prove Shakespeare was a good naturalist, or rather a correct observer of nature, as to birds, insects, &c., and their habits, it is probable that neither he nor his annotator was either of them aware of the instinct above alluded to, of the cuckoo's selection of the nest of an insect-feeding bird in which to place its egg, with a view to the proper food being provided for its deserted young one, which is left to strangers to its nature to bring up, but whose food is similar to that of the cuckoo's, and known to the latter to be so. Shakespeare did not know this when alluding to the sparrow, any more than did Mr. Tennyson of the habits of the swallow, when he mentions "swallows hunting the bee," which, as Mr. Broderip remarks, they never do. Why, then, should so very different a kind of sustenance as other birds' eggs, and with so much difficulty in general to be procured, be selected by cuckoos, when their more natural food can be easily obtained by them? and because eggs and

egg-shells are more frequently found beneath the nests of other birds in those months when the cuckoo is sojourning with us, that is no good reason for charging it so universally, as is the case, with their destruction; for, that being the period when all kinds of birds are laying, of course many more accidents to these occur, and a much more constant destruction of eggs takes place by other means. I cannot, therefore, think there are any just grounds for accusing the poor cuckoo of this felonious propensity, either for the purpose of clearing its voice or as a matter of food; and I should much wish to be able by these suggestions to relieve so pretty and universally welcomed a bird from this often-repeated, and, as I believe, unfounded and opprobrious accusation, unless any of the numerous contributors to the 'Zoologist' can bring satisfactory evidence to prove the contrary is really the fact.

W.M. H. SLANEY.

Hatton Hall,

October 14, 1856.

Rissoa lactea in Jersey and the Isle of Herm.—*Rissoa lactea* owed its insertion in the 'British Mollusca' to the discovery by Mr. Hanley of four living examples, "under large masses of stone at St. Helier's, Jersey, taken by wading into pools at very low water." Any conchologist visiting Jersey will meet with the species dead, but in good condition, by examining carefully the sides of the raised bank which connects the castle with the shore, but which is covered at high water. The *Rissoa*, however, would seem not to be confined to Jersey, as I have lately taken a single specimen from among Herm shell-sand.—*Alfred Merle Norman; Kibworth, September 3, 1856.*

Limax Gagates in Scotland and Guernsey.—I have already recorded the occurrence of this recently distinguished British slug in two or three localities (Zool. 4048, 4284). I have now the pleasure of stating that I have found it in Scotland and the Channel Isles; I believe for the first time in both places. In the summer of 1854 I took a specimen in the grounds of the College, Isle of Cumbrae, in the Clyde; and last month I met with a specimen in the parish of St. Martin's, Guernsey. I may mention that all the specimens which have occurred to me have been taken on grass or hedge-banks after very heavy storms of rain.—*Id.*

Octopus vulgaris at Herm.—This fine cuttle-fish is by no means rare at Herm, where it is taken under stones and among weeds at low water.—*Id.*

Eurylepta vittata at Herm.—I met with this remarkable Planarian in some numbers, on the under side of the granite rocks, at the Galeomma ground, in the Isle of Herm. If it were not for the absence of the branchial plumes, it reminds us not a little of a Nudibranch Molluscan.—*Alfred Merle Norman; Kibworth, September 3, 1856.*

Duration of Pupa-state in Acherontia Atropos.—In the last 'Intelligencer' information is requested relative to the pupa-state of *Acherontia Atropos*. About eight years ago a friend brought me a full-grown larva, which was dug up in a garden near the barracks, and was so large that I was afraid to put it with any other insects, so I placed it in an old cigar-box, filled with leaf-mould and covered with a piece of net: it went down and then came up to the top of the mould, and then went down a second time. It went down on the 28th of July, and came out on the 17th of September, which was fifty-two days. I had the good fortune to be standing by when it came out, or it might have got damaged if puss had got at it, she having as great a fancy for catching moths as her master, though for quite a different purpose. Some time after it had changed to the pupa I was curious enough to examine its whereabouts: I cleared the mould away until I came to a portion which was hard and of an oval shape, of about $3\frac{1}{2}$ inches in length by $2\frac{1}{2}$ in width: I did not like to continue the examination any longer, so I covered it up, but after it came out I examined it, and found it composed of mould kneaded into a sort of paste, which the larva had mixed with gum; I could find very little silk mixed up with it, but I could see it was proof against moisture. I had another larva brought me the same season, but it was too late, and it died in the winter after going into pupa: I think they do not stand the winter well; the shell of the pupa is so thin that the least puncture will prove fatal. I had a very fine pupa brought to me by one of our men, who was poking with a stick at the side of an old gravel-pit: it changed in the sand where the water came quite close to it, but it either got a squeeze, or was otherwise injured with the stick, for it died in two or three days.—*James M'Laren; Worley Barracks, October 20, 1856.*

Larva of Stauropus Fagi on the South Downs of Sussex.—Toward the end of last September, my friend and neighbour Dr. Smith, when walking up the village, observed on the path a caterpillar, the peculiar aspect of which attracting his attention, he carried it home, and, on referring to Knight's 'Pictorial Museum of Animated Nature,' he recognised it from the figure of *Stauropus Fagi*. The creature, on being supplied with some beech-leaves, immediately enclosed itself between a couple of them, apparently being full-fed, and having been, when found, in the act of travelling from the place where it had been produced in search of a fit spot for its next transformation. I doubt whether there is more than one beech tree in the garden where this specimen was probably bred; there may be others in the village, but they cannot be numerous, and *all, without an exception*, must be very small. The nearest plantation wherein other beech trees may exist must be distant more than half a mile in a direct line, and there is a much longer interval between any situation where a few such trees may stand and any extensive collection of them, such as the park and planted woods of the Earl of Chichester, at Stannier. As the insect is stated to be rare in England, its occurrence in such a very unlikely district as this part of the South Downs of Sussex may be interesting to entomologists. Since Dr. Smith possesses no information how the chrysalis should be treated to ensure its preservation in life,—at what period it may be expected to change, and what is the figure of the imago,—he will be thankful for intelligence on those particulars in a future number of the 'Zoologist.'—*Arthur Hussey; Rottingdean, October 21, 1856.*

[The pupæ of *Stauropus Fagi* do not require any particular care: the larvæ usually spin two or three leaves together, and, when found in this state, Mr. Doubleday informs me he usually cuts off the nest thus formed, and pins it up to the side of the breeding-cage. In the woods these nests, in all probability, fall with the falling

leaves, and remain throughout the winter on the ground: this will account for the imago being found adhering to the trunks of trees.—*Edward Newman.*]

Capture of Phlogophora empyrea, Agrotis saucia and Phibalapteryx gemmaria at Brighton.—Please to record in your November number the capture of *Phlogophora empyrea*, which was taken a few days since not far from Brighton. Mr. Howse, of St. James Street, and myself, also took at the same time three specimens of *Agrotis saucia*—another rare insect in this locality; also the same evening, by Mr. Howse, one male specimen of *Phibalapteryx gemmaria*, which is in Mr. A. F. Sheppard's collection. Although so rare now, I have no doubt that *Phlogophora empyrea* will turn up more plentiful, and I would caution tyros in Entomology not to give too long prices for an insect that will most likely be common after another year or two, this being the second locality where it has been taken, and many miles apart.—*T. Thornicroft; 87, North Lane, Brighton, October 14, 1856.*

Capture of Phlogophora empyrea near Lewes, &c.—I have received accounts of the capture of no less than thirty-six other specimens of *Phlogophora empyrea* near Lewes, and also near Shoreham: all were taken by sugaring in marshy ground. Four beautiful specimens of *Agrotis saucia* have been taken in the same localities, and by the same means.—*Edward Newman.*

Mr. Gregson's Pœcilocroma stabilana a variety of P. sordidana,—*Mr. Stephens' P. stabilana equals P. Solandriana.*—At p. 124 of the 'Entomologist's Weekly Intelligencer,' Mr. Gregson states of *Pœcilocroma stabilana*, *Steph.*, "This very variable species I am now breeding from the *Myrica Gale*." I have just been shown some specimens received from Mr. Gregson of what he calls *stabilana*, and as they are merely ordinary varieties of *P. sordidana* I deem it only right to let this fact be known, as it seems an insult to the memory of our lamented friend to state that he had named a "very variable" insect *stabilana*. I may add that the insects named *stabilana* by Stephens, if not a distinct species, are very large plain specimens of *Solandriana*. I think that entomologists ought to be a little more careful in making statements, especially when they are likely to reflect on those who are no longer living to refute them.—*Edwin Shepherd; 176, Fleet Street.*

Capture of Sphinctus serotinus of Gravenhoorst.—I had the good fortune to beat a single specimen of this, one of the very rarest of our Ichneumonidæ, out of an oak tree in Wickham Wood, about the middle of the present month. Mr. Smith, of the British Museum, has most obligingly furnished me with the name.—*Thomas Ingall; 16, Park Road, Brixton, September 30, 1856.*

NOTICES OF NEW BOOKS.

'*Annals and Magazine of Natural History*,' Nos. 103—106, dated July—October, 1856. Price of No. 104, 5s., of the others 2s. 6d. each. London: Taylor and Francis, Red Lion Court, Fleet Street.

The contents of No. 103 are as follow:—

'*Monograph of the Genus Catops.*' By Andrew Murray.

'*On a second New Species of Sphærium from the Paddington Canal.*' By Dr. J. E. Gray, F.R.S., &c.

‘On the Habits of the Orang-Utan of Borneo.’ By A. R. Wallace.
 ‘Polyzoa collected by Mr. M‘Andrew on the Coasts of Norway and Finmark in 1856.’ By George Busk, F.R.S., F.L.S.

‘On the Evils of increasing Synonyms.’ By S. P. Woodward, F.G.S.
 ‘Observations on the External Characters and Internal Anatomy of a Bitentaculate Slug, found at the Island of Aneiteum, New Hebrides.’ By John Denis Macdonald, R.N.

‘On Vegetable Cell-formation.’ By Prof. Arthur Hensfrey, F.R.S.
 ‘On the Method of Palæontology.’ By Thomas H. Huxley, F.R.S.

Bibliographical Notices:—‘The Ferns of Great Britain;’ illustrated by J. E. Sowerby; the descriptions by C. Johnson. ‘The Ferns of Great Britain and their Allies;’ by Anne Pratt. ‘The Fern Allies;’ illustrated by J. E. Sowerby; descriptions by C. Johnson. ‘British Poisonous Plants;’ by C. Johnson.

Proceedings of Learned Societies:—Zoological; Royal Institution of Great Britain; Botanical of Edinburgh.

Miscellaneous:—Note on *Edwardsia vestita*, *Forbes*; by P. H. Gosse. On *Cyclas lacustris*, *Draparnaud*; by J. Gwyn Jeffreys. Occurrence of *Clausilia Mortilleti* in Kent; by W. H. Benson. On the Siliceous Sporangial Sheath of the Diatomaceæ; by J. W. Griffith, M.D. Travels in Central America; by MM. Scherzer and Wagner. On the Non-existence of Polarizing Silica in the Organic Kingdoms; by Prof. J. W. Bailey.

The contents of No. 104 are as follow:—

‘On the Development and Propagation of *Sphærophea annulina*.’ By Dr. Ferdinand Cohn. [Extracted from the *Monatsbericht* of the Berlin Academy for May, 1855.]

‘New Terrestrial Shells from Ceylon, with a General List of the Species inhabiting that Island.’ By W. H. Benson, Esq.

‘Notice of a curious Metamorphosis in a Polype-like Animal.’ By C. W. Peach.

‘Brief Outline of the Anatomy of the Genus *Atlas*, *Lesueur*.’ By John Denis Macdonald, R.N.

‘On the Development of *Arenicola piscatorum*, with Remarks upon that of other Branchiferous Annelides.’ By Dr. Max Schultze. [Extracted from the *Abhandl. der Naturforsch. Gesellsch. in Halle*, vol. iv.]

‘Notes on the Fresh-water Infusoria of the Island of Bombay.’ No. 1. Organization. By H. J. Carter, Esq.

‘Monograph of the Genus *Catops* (*continued*).’ By Andrew Murray.

‘On a new British Species of *Skenea*.’ By W. Webster, Esq.

‘Description of a new Species of *Dolphin*, from the upper parts of the River Amazon.’ By Dr. J. E. Gray, F.R.S., &c.

Bibliographical Notices:—‘Manual of Geology, Practical and Theoretical;’ by John Phillips, M.A., F.R.S., &c. ‘Tenby: a Seaside Holiday;’ by P. H. Gosse. ‘Manual of British Botany; containing the Flowering Plants and Ferns, arranged according to the Natural Orders;’ by Charles Cardale Babington, M.A., F.R.S., F.L.S., &c. (fourth edition). ‘Trees and their Nature; or the Bud and its Attributes;’ by Alex. Harvey, A.M., M.D., &c.

Proceedings of Societies:—Zoological; Botanical of Edinburgh.

Miscellaneous:—On the probable Origin of the Organized Beings now living in the Azores, Madeira and the Canaries; by M. Oswald Heer [extracted from the *Bibliothèque Universelle de Genève*, April, 1856, p. 327]. Note on *Clausilia plicatula* and *C. Mortilleti*; by J. Gwyn Jeffreys, Esq., F.R.S. Note on *Lernæa branchialis*; by W. P. Cocks. On two new Species of Birds from Santa Fé di Bogota; by Philip Lutley Sclater, M.A., F.L.S. On the British Diastylidæ; by C. Spence Bate, F.L.S. Note on *Helix cantiana*, *Mont.*; by W. Lonsdale, F.G.S. Description of a Fossil Cranium of the Musk Buffalo from the Gravel at Maidenhead, Berks; by Prof. Owen, F.R.S. A Last Word on *Scissurella*; by J. Gwyn Jeffreys, Esq. F.R.S. New Mode of cleaning Diatomaceous Deposits; by Prof. J. W. Bailey. New Method of disintegrating Masses of Fossil Diatomaceæ; by Prof. J. W. Bailey.

The contents of No. 105 are as under:—

‘Attempt at a Natural Arrangement of Birds.’ By Alfred R. Wallace, Esq.

‘Recent Discoveries in Vegetable Embryogeny.’ By Arthur Henfrey, Esq., F.R.S.

‘On *Edwardsia carneæ*, a new British Zoophyte.’ By Philip H. Gosse, F.R.S.

‘Notes on the Fresh-water Infusoria of the Island of Bombay.’ No. 1. Organization. By H. J. Carter.

‘Descriptions of one Indian and nine Burmese *Helices*; and Notes on two Burmese Cyclostomacea.’ By W. H. Benson, Esq.

‘On an Abnormality in the Flowers of *Salix Andersoniana*.’ By John Lowe, Esq.

‘*Cardium exiguum*: its Siphons and its Byssus.’ By Philip H. Gosse, F.R.S.

Bibliographical Notices:—‘An Introduction to Entomology; or, Elements of the Natural History of Insects;’ by William Kirby, M.A., F.R.S., F.L.S., and William Spence, F.R.S., F.L.S. ‘Ferny Combes; a Ramble after Ferns in the Glens and Valleys of Devonshire;’ by Charlotte Chanter.

Proceedings of Societies:—Zoological.

Miscellaneous:—On the Vitality of the *Anguillulae* of Mildewed Wheat; by C. Davaine [extracted from the *Comptes Rendus* for July 21, 1856, p. 148]. Notice of a New Species of Nocturnal Lizard from Mexico; by Dr. J. E. Gray, F.R.S. &c. On a new Genus and Species of *Trochilidæ* from Ecuador; by John Gould, F.R.S., &c.

No. 106 contains:—

‘Monograph of the British *Umbilicariæ*.’ By the Rev. W. A. Leighton, B.A., F.B.S.E.

‘On the Development of the Lampreys.’ By August Müller. [Extracted from Müller’s *Archiv*, 1856, No. IV. p. 323.]

‘Monograph of the Genus *Catops*.’ By Andrew Murray.

‘Contributions to the Anatomy of the Infusoria.’ By N. Lieberkuhn. [Extracted from Müller’s *Archiv*, January, 1856.]

‘New British Arthoniæ.’ By the Rev. W. A. Leighton, B.A., F.B.S.E.

Proceedings of Societies:—Royal; Botanical of Edinburgh; Zoological.

Miscellaneous:—Obituary Notice of William Yarrell. *Amphioxus lanceolatus*; by W. P. Cocks. Description of a newly-discovered Tanager of the Genus *Buarremon*; by Philip Lutley Sclater, M.A., &c.

The following extract from Mr. A. R. Wallace’s note ‘On the Habits of the Orang-Utan of Borneo,’ will be read with interest:—

“It is a singular and most interesting sight to watch a mias making his way leisurely through the forest. He walks deliberately along the branches, in the semi-erect attitude which the great length of his arms and the shortness of his legs give him: choosing a place where the boughs of an adjacent tree intermingle, he seizes the smaller twigs, pulls them towards him, grasps them, together with those of the tree he is on, and thus, forming a kind of bridge, swings himself onward, and, seizing hold of a thick branch with his long arms, is in an instant walking along to the opposite side of the tree. He never jumps or springs, or even appears to hurry himself, and yet

moves as quickly as a man can run along the ground beneath. When pursued or attacked, his object is to get to the loftiest tree near; he then climbs rapidly to the higher branches, breaking off quantities of the smaller boughs, apparently for the purpose of frightening his pursuers. Temminck denies that the orang breaks the branches to throw down when pursued; but I have myself several times observed it. It is true he does not throw them *at* a person, but casts them down vertically, for it is evident that a bough cannot be thrown to any distance from the top of a lofty tree. In one case, a female mias, on a durian tree, kept up for at least ten minutes a continuous shower of branches and of the heavy-spined fruits, as large as 32-pounders, which most effectually kept us clear of the tree she was on. She could be seen breaking them off and throwing them down with every appearance of rage, uttering at intervals a loud pumping grunt, and evidently meaning mischief.

"When a mias is once up a lofty tree, there is no danger of his getting away, as he will not descend to the lower branches, which he must do to pass to another tree. As soon as he feels himself badly wounded, he makes a nest, which, if he completes, is so secure that he can never fall from it. I lost two miases that way, both dying on their nest, when I could not get any one to climb up or cut down the tree till next day, when putrefaction had commenced. They choose a horizontal forked branch, and breaking off all the branches in its neighbourhood, lay them across one another until a complete leafy bed is made, which quite hides them from below, and from which they will not move afterwards. Their tenacity of life is very great; from six to a dozen bullets in the body being required to kill them or make them fall.

"Every night the mias sleeps on a nest similar to that above described, but smaller, and generally placed on a small tree, not more than fifty or sixty feet from the ground. The same animal appears seldom to use the same nest more than once or twice, and they are accordingly very abundant in places frequented by the mias. They feed all through the middle of the day, but seldom return to the same tree two days running. They seem not much alarmed at man, often staring down upon me for several minutes, and then moving away slowly to a short distance. After seeing one, I have often had to go a mile or more to fetch my gun, and, in almost every case, have found it on my return within a hundred yards of the place. I have never seen two adult animals together, but both males and females are sometimes accompanied by half-grown young ones, or two or three of the

latter go in company. They very rarely descend to the ground,—probably only in search of water."—p. 27.

Mr. Wallace's 'Attempt at a Natural Arrangement of Birds' is full of information and genuine out-of-doors observation, and had the author been unfettered by those chains on the intellect, the artificial methods in books, he would doubtless have succeeded in giving us a digested whole; as it is, he applies his natural arrangement only to the Passeres, and leaves all the rest in its pristine intelligibility. His views, wherever he faces the subject, are clear, masterly and correct: he makes three orders of the Passeres of Cuvier:—1, the true Passeres; *i. e.* the shrikes, tanagers, finches, crows, larks, wagtails, warblers and sunbirds. 2, the birds which seize their prey on the wing, and use their feet for resting only, not for terrestrial or arboreal progression, as the goatsuckers, swallows, humming-birds, jacamars, bee-eaters, trogons, kingfishers and hornbills; and, lastly, the birds which use the wings only for purposes of locomotion, and not when taking food, which have grasping feet and strong legs, as the cuckoos, the woodpeckers, the parrots, the Coliidæ, the touracous, the genus *Opisthocomus*, the buccos and the toucans. The last group is indicated by Cuvier's Grimpeurs, the preceding one by his Fissirostres; but that great author's exclusive dependence on the structure of beak and toes rendered both these divisions incomplete and unnatural. A far more intimate acquaintance than I possess with the Coliidæ and *Opisthocomus* is required before I can decide on the propriety of combining them with the Grimpeurs.

'*Journal of the Proceedings of the Linnean Society.*' Parts II. and III., dated June and November, 1856. Price 3s. each. London: Longman & Co.

The zoological papers in No. 2 are as follows:—

'On the Natural History of the Glowworm (*Lampyris noctiluca*).'
By the late George Newport, Esq., F.L.S.

'On the Quantity of Tannin in the Galls of *Cynips Quercus-petiolii*.'
By Edward Hart Vinen, Esq., F.L.S.

'Note on *Lepidosiren annectens* of Owen.' By Edward Newman, Esq., F.L.S.

'Description of a New Species of *Paussus* from Central Western Africa.' By J. O. Westwood, Esq., F.L.S., &c.

'On the Influence of the Sexual Organ in Modifying External Structure.' By William Yarrell, Esq., V.P.L.S., &c.

‘ Catalogue of the Homopterous Insects collected at Singapore and Malacca by Mr. A. R. Wallace, with Descriptions of New Species.’ By Francis Walker, Esq. F.L.S. [concluded in No. 3].

The zoological papers in No. 3 are as follows:—

‘ On the Occurrence of *Sepia biserialis* in Cornwall.’ By Jonathan Couch, Esq., F.L.S.

‘ Notice of the Borer, a Caterpillar very injurious to the Sugar Cane.’ By J. O. Westwood, Esq., F.L.S., &c.

‘ Notice of a Specimen of Insect Wax from China.’ By Daniel Hanbury, Esq., F.L.S., &c.

‘ Note on Insects producing Wax from Port Natal and China.’ By J. O. Westwood, Esq., F.L.S., &c.

‘ Catalogue of the Dipterous Insects collected at Sarawak, Borneo, by Mr. A. R. Wallace, with Descriptions of New Species.’ By Francis Walker, Esq., F.L.S., &c.

‘ Note on a New Organ in Insects.’ By John Braxton Hicks, Esq., M.D. London, F.L.S., &c.

On the first appearance of this Journal, I bore my humble testimony to its value and utility. So far from having receded from its original excellence, it seems to have improved. There are, however, one or two points open to criticism, and as honest criticism has wrought a wonderful change for the better in the numbering of the plates of another journal, I may venture to hint it is susceptible of improvement here. Instead of the present obscure method, each plate should be legibly headed ZOOLOGY, PLATE I., or BOTANY, PLATE I., and the plates intended to illustrate a paper should appear simultaneously with that paper. The plan of compelling a non-subscriber to purchase two numbers of a journal in order to procure one paper is one of the most hackneyed, and at the same time one of the meanest tricks of scientific journalism. The Linnean Society must not descend to it. The instance to which I allude is the paper by Mr. Hicks, bearing a most inviting title: in order to make it intelligible this paper appears to have been liberally illustrated, and this illustration is absolutely requisite: a great number of references are made to a Plate V., but Plate V. is unpublished, and should the Society again revert to its long-interval mode of publication, the Fellows now living may hardly hope to obtain it.

‘*The Natural History Review.*’ No. XII., dated October, 1856.
Price 3s. 6d. London: Williams and Norgate.

Concomitant with the increase in price of this work there seems decrease in interest: all the “original communications” have appeared in the Dublin newspapers, and some of them, we think, had better not have been transferred to a scientific journal. One of the reviews must, however, be noticed as very excellent: it is of Mr. Walker’s ‘*Insecta Britannica, Diptera*,’ and is signed “H. L.” This review extends to thirty pages, and displays an erudition which is very rarely equalled: it is, in all respects, a valuable contribution to science. Where the reviewer finds an opportunity of praising he praises heartily and without reserve; where he sees errors or omissions he points them out with the greatest good feeling and fairness.

The contents of this number are as under:—

REVIEWS.—‘*Popular Geography of Plants*;’ by E. M. C.; edited by Charles Daubeny. ‘*Popular History of British Lichens*;’ by W. Lauder Lindsay. ‘*Insecta Britannica, Diptera*;’ by Francis Walker. ‘*Manual of British Butterflies and Moths*;’ by H. T. Stainton. ‘*Ferns of Great Britain*;’ by J. E. Sowerby. ‘*The Fern Allies*;’ a Supplement to the preceding. ‘*British Poisonous Plants*;’ by Charles Johnson.

ORIGINAL COMMUNICATIONS.—Experiments on the effect of periodically abstracting Eggs from the Nests of Birds, and Notes on the Change of Colour in Birds and on Edge-moult; by R. J. Montgomery, Esq. [a paper concluded only]. Remarks on Moths which cause Destruction in Granaries; by James Haughton, Esq., Jun. On the Analysis of Spodumene and Killinite; by the Rev. S. Haughton, F.T.C.D. On *Botrychium Lunaria*, its most remarkable varieties; by J. R. Kinahan, Esq., M.B. On the Occurrence of *Gonepteryx Rhamni* and *Thecla Betulæ* in Kerry; by W. Andrews, Esq. Dates and Localities of some rare British Bees; extract of a Letter from J. C. Dale, Esq., A.M., F.L.S. On a Disease attacking the Minnow (*Leuciscus phoxinus*); by E. Percival Wright, Esq., A.B. On the Occurrence of *Sciæna umbrina* in Cork Harbour; by R. Ball, Esq., LL.D. First Supplement to the Catalogue of Coleoptera found in the Neighbourhood of Dublin; by the Rev. A. R. Hogan, A.B. Notice of two Irish Dipterous Insects; by A. H. Haliday, A.M. On the Occurrence and Distribution of *Anthrocera Minos* in the West of

Ireland; by E; Percival Wright, Esq., A.B. On *Stepanomia contorta*, an addition to the British Fauna, and on the Genus *Agalma* of Eschscholtz; by A. G. Melville, M.D., Professor of Natural History in Queen's College, Galway. Journal of the Dublin Geological Society. On the Lower Carboniferous Beds of the Peninsula of Hook County of Wexford; by the Rev. S. Haughton, M.A., Professor of Geology in the University of Dublin. The Igneous Rocks of the Berehaven District; by G. H. Kinahan, Esq. Geological Survey of Ireland. On the Probable Existence of Fossils in the Limestone of Guldaff, County of Donegal; by Patrick Ganly. Observations on the Structure of Strata; by Patrick Ganly. On the Trappean Rocks in the Neighbourhood of Killarney; by Frederick Foot. On the Geology of the Chinchas Islands, Peru, South America; by J. R. Kinahan, Esq., M.B.

Notices of Serials.

'An Introduction to Entomology; or, Elements of the Natural History of Insects., comprising an Account of Noxious and Useful Insects,' &c. By WILLIAM KIRBY, M.A., F.R.S., F.L.S., Rector of Barham, and WILLIAM SPENCE, Esq., F.R.S., F.L.S. Seventh Edition, with an Appendix relative to the Origin and Progress of the Work. 608 pp. post 8vo, price 5s. London: Longman & Co. 1856.

It was a graceful act on the part of the surviving author of the 'Introduction to Entomology' to give the world this cheap and portable edition of a work which has ever stood at the head of introductory works on Science, and which is indispensable to the student of Entomology. In whatever light we view the 'Introduction,' its utility and value are equally apparent. To the tyro, yet on the very threshold of the study, it conveys sound instruction in the most simple and enticing form; he is led on irresistibly, and is compelled, as it were, unconsciously to imbibe the soundest instruction. To the more advanced student it is equally serviceable, for it collects and methodizes all existing information on every branch of the subject. It should have been mentioned, perhaps I have overlooked such mention, that this reprint extends only to the first and second volumes of the original work; the third and fourth have been most wisely omitted. Whatever opinions may be entertained as to the intrinsic merit of the

omitted volumes, it is certain they never became popular, and always acted as a kind of drag on those which preceded them.

This reprint is one of those works on which criticism would be altogether out of place ; the world has long since passed a verdict in its favour, and its reappearance in this cheap yet substantial form is the greatest boon that Entomology has ever received at the hands of an author. I am credibly informed that Mr. Spence has caused this volume to be issued at a cost which renders profit impossible ; and which, therefore, as a matter of course, incurs the risk of a heavy loss. Let no naturalist forget that by extending the sale this risk is diminished ; and that it is a positive duty to make the attempt, to relieve from all loss one who has acted thus nobly in the cause of Science.

'A Natural History of the Animal Kingdom, being a Systematic and Popular Description of the Habits, Structure and Classification of Animals.' By W. S. DALLAS, F. L. S. 8vo, 820 pp. letter-press ; numerous woodcuts ; price 8s. 6d. London : Houlston and Stoneman. 1856.

The publication of the 'Règne Animal,' and its translation into all modern languages, have made it a comparatively easy task to compile Natural Histories of the Animal Kingdom. The 'Règne Animal' is to the zoologist what the Testament is to the Christian. As all Christian sects merge in the one general faith, so all teaching of Zoology emanates from the one great book. It matters not that often, as in the present instance and the prior publication of Van Hoeven, the work is turned end for end ; it matters not that, as in both instances, more recent observations are skilfully and judiciously introduced ; still all our Zoology is Cuvierianism, and ever must remain so, while structure maintains its present position as the one sole basis of classification : and the reason for this is obvious : Cuvier not only carried his knowledge of structure far beyond any other naturalist, living or dead, but methodized that knowledge with an almost super-human skill and exactitude. It yet remains to be seen whether structure is the true basis of classification ; whether physiological will succumb always, as now, to physical differences ; whether the radiate structure of a starfish will take precedence of those physiological conditions which necessitate that tradition ; whether the form or presence

of a fin will, as a diagnostic character, supersede the great faculty of swimming for which that fin is provided; whether the form of a maxilla so similar in a grasshopper and a beetle, will be regarded as more worthy of note than those differences of metamorphosis which have been the wonder of the unlearned and the admiration of sages in all ages of the world.

Mr. Dallas has evidently read up for his task with care and assiduity, and there is abundant evidence of much book knowledge throughout the volume. There is nothing, however, that displays a practical acquaintance with the subject, except in that portion of the volume devoted to insects, and here Mr. Dallas's knowledge of the things themselves becomes more manifest; but unfortunately he has not the knack of methodizing that knowledge so as to make it easy and agreeable to the student; take, for instance, his general arrangement of Articulate animals: here it is—

Subdivision 1. *Vermes.*

Class 1. *Platyelmia* [Entozoa].

Order 1. *Cestoidea.*

Order 2. *Trematoda.*

Order 3. *Planarida.*

Class 2. *Nematelmia.*

Order 1. *Acanthocephala.*

Order 2. *Gordiacea.*

Order 3. *Nematoidea.*

Class 3. *Annelida.*

Order 1. *Suctoria* [the leaches].

Order 2. *Scolecina* [earth-worms].

Order 2 [3]. *Tubicola.*

Order 4. *Errantia.*

Class 4. *Rotifera* [Infusoria].

Order 1. *Sessilia.*

Order 2. *Natantia.*

Subdivision 2. *Arthropoda.*

Class 5. *Crustacea.*

Subclass and Order 1. *Cirrhopoda.*

Subclass 2. *Entomostraca.*

Order 2. *Parasita.*

Order 3. *Copepoda.*

Order 4. *Ostracoda.*

Order 5. *Phyllopoda.*

Subdivision 3. Xyphosura.

Order 1. Xyphosura.

Subclass 4. Edriophthamata.

Order Laemodipoda.

Order Amphipoda.

Order Isopoda.

Subclass 5. Podophthalmata.

Order Stomapoda.

Order Decapoda.

Suborder 1. Macrura.

Suborder 2. Anomura.

Suborder 3. Brachyura.

Class 4. Arachnida.

Subclass 1. Trachearia.

Order 1. Podosomata.

Order 2. Acarina or Monomerosomata.

Order 3. Adelarthrosomata.

Subclass 2. Pulmonaria.

Order 4. Polymerosomata.

Order 5. Dimerosomata.

Class 7. Myriapoda.

Order 1. Chilopoda.

Order 2. Chilognatha.

Class 8. Insecta.

Subclass 1. Ametabola.

Order 1. Anoplura.

Order 2. Mallophaga.

Order 3. Thysanura.

Subclass 2. Hemimetabola.

Order 4. Rhynchota [Hemiptera].

Suborder 1. Homoptera.

Suborder 2. Heteroptera.

Order 5. Physapoda [Genus Thrips].

Order 6. Orthoptera.

Order 7. Neuroptera.

Suborder 1. Dyctyoptoptera [Neuroptera, *Newman*].Suborder 2. Planipennia } [Stegoptera, *Newman*].Suborder 3. Trichoptera } [Stegoptera, *Newman*].

Subclass 3. Metabola.

Order 8. Aphaniptera [Pulex].

Order 9. Diptera.

Suborder 1. Pupipara.

Suborder 2. Brachycera.

Suborder 3. Nemocera.

Order 10. Lepidoptera.

Suborder 1. Heterocera.

Suborder 2. Rhopalocera.

Order 11. Hymenoptera.

Suborder 1. Securifera.

Suborder 2. Petiolata [comprising all but the sawflies].

Order 12. Strepsiptera.

Order 13. Coleoptera.

Section 1. Trimera.

Section 2. Tetramera.

Section 3. Heteromera.

Section 4. Pentamera.

Were I to say that I could not agree to accept such an arrangement of exosteate animals as this, I should simply announce that Mr. Dallas and I differ in our views of system, and of course the announcement of that difference neither depreciates Mr. Dallas's nor enhances the value of my own; but this I may say, that supposing Mr. Dallas to be correct in his views,—supposing him to be philosophical in making such novel combinations and in introducing such uncouth names,—of this I am confident, that no “incipient” can master a system so fraught with difficulty, and that Entomology must remain, for fifty years at least, a sealed book to all but those who are deeply read,—profoundly instructed in the speculative philosophy of the German visionaries.

Reviewing the system carefully, I find some points of accordance with my own published views; such is the reunion of the helminthoids; such is the juxtaposition of the Hemiptera, Orthoptera and Neuroptera, of the Diptera and Lepidoptera, of the Hymenoptera and Coleoptera. I am therefore in no way prejudiced against, but rather in favour of, the principles Mr. Dallas has avowed; but it seems to me that he has committed two capital errors: he has carried into the actiniate province laws which obtain only in the exosteate, and in methodizing his views he has rendered them cumbrous and difficult to understand.

The work is full of illustrations, some of which are good, others very bad: in the coloured frontispiece the ostriches have scarlet

necks, and the artist seems so self-satisfied with this novelty in Science that he has assigned three of these extraordinary necks to two bodies. Notwithstanding these drawbacks the book will be found highly instructive, and is published at a wonderfully low price: think of a shilling for a hundred closely-printed and profusely illustrated pages!

'A Manual of Marine Zoology for the British Isles.' By PHILIP HENRY GOSSE, F.R.S. Part II.; 12mo, 240 pp. letter-press, 339 woodcuts; price 7s. 6d. London: Van Voorst. 1856.

The publication of the first part of this work elicited so many testimonies to its usefulness as to satisfy the author that he had not erred in supposing that such a book was needed: he now introduces a second and final part, hoping it may be received with as much favour as its predecessor, and of this, I think, there is little doubt. By a most singular coincidence the number of figures in this volume (three hundred and thirty-nine) is exactly the same as in the former, and, as each genus is illustrated, we see that the actiniate and exosteate forms found in the sea are equal in number to the anosteate and endosteate. Of the three hundred and thirty-nine figures two hundred and thirty-two are original, one hundred being drawn from living, or, in the case of fishes, from fresh specimens, and one hundred and thirty-two from specimens preserved either dry or in spirit: a list at the end of the volume shows the authorities from which the author has copied the remaining one hundred and seven. A supplement to the first volume is added, and in this the author amends the errors and deficiencies which, in my former notice (Zool. 4885) I took the liberty of pointing out as existing in his account of marine insects.

One feature in this book is strikingly new; the author appears to consider we have no sea-birds in Britain: he dismisses them with this brief note,—“Of the intervening classes, Amphibia, Reptilia and Aves, Reptilia is the only one which includes marine species, and of these none can properly be considered as British.”—Footnote to page 204. This seems to me a great mistake; not only have we birds so emphatically marine that they never leave the sea or its precipitous coasts, but they are birds of most interesting habits, and would have added a most valuable chapter to this agreeable and useful volume.

Every British naturalist should supply himself with this work, for, notwithstanding the omission I have noticed above, it is an indispensable companion to the inquirer when fixing his residence, even for a week, on the coasts of our sea-girt island.

'A Manual of the Sea-Anemones commonly found on the English Coast.' By the Rev. GEORGE TUGWELL. Royal 12mo, 123 pp. letterpress; seven plates, printed in colours; price 7s. 6d. London: Van Voorst. 1856.

"Let me premise, by way of introduction, that the ensuing pages lay no claim to the character of a scientific treatise on the subject of Marine Zoology, nor are they a monograph of the genus indicated by the title-page." So says the author, but he only partially carries out this assertion; he does claim for the book a scientific character, as many of the descriptions will show; take this, for instance, from p. 18:—

"HYDRAFORMS.—Polyps single and associated; stomach without a distinct wall; reproduction external; tentacles variable in number. ASTEROIDS.—Polyps associated, supported in a fleshy mass or poly-didom; stomach with distinct walls; tentacles in definite number 6—8; reproduction internal. HELIANTHOIDS.—Polyps single or connected only by a creeping stem, free or attached; soft or encrusted with lime; stomach free; number of tentacles indefinite; reproduction internal."

Now, allowing our faith to be implicit in the author's knowledge, shall not we, the uninitiated, stumble at the threshold? What does the paradox "single and associated" mean? Immediately afterwards we find that Asteroids have more than one wall to their stomachs, although Hydraforms have none; and in Helianthoids it appears of no consequence whether the stomachs are walled or not, but we are told they are "free." The reader will recollect the author distinctly disclaims having attempted "a scientific treatise." "But," inquires our reader, "is it all in this style?—surely Mr. Tugwell has something more intelligible than this. I really don't know whether my

own stomach has two walls, one, or none, and I am confident I could never find out this character in a polype. I don't even know whether it be 'free,' but I know it complains when I make too free with it." Gentle reader! this exhibition of Science is exceptional: the author has widely different and more intelligible passages; here is one in the 'Alton Locke' style, but not in inverted commas, and therefore, we suppose not from the pen of Mr. Kingsley:—

"Were you ever led, reader, by chance or by choice, into one of the plague-courts of London? I do not speak of the Black Death of the fourteenth century, but of that pestilence which is hardly less fatal in our own times, the plague of neglected poverty,—starving on mouldy crusts and fiery gin,—choking in a poisoned atmosphere,—wallowing in the accumulated filth of countless years. Have you ever trodden those crowded, mouldering lanes and alleys, where open sewers—witches' cauldrons of festering filth—seethe and welter by the open doors,—nay, roll their rank pollution through the very heart of the poor man's home; where vermin, unnamed and unknown in civilized life, creep and writhe, and die and rot, on wall and floor and roof—a moving, mortifying crust of life and death—the mockery and bathos of the decorative art; where the sickly glare and the wearied smile of consumption ape the glance and the laughter of health; where the strong grow weak, and the weakly bow the head and die; where the innocence of the child is taught to curse and lie and steal; where the pride of manhood is quenched in the imbecile leer of the sot; where the fair honour of womanhood is sullied, like the snow which falls in those infernal regions; where God is as unknown as the pure air of His own heaven?"

Though not very original, this is certainly very fine writing; and the author has introduced three consecutive pages of such writing as an introduction to the assertion that such places are not adapted to the welfare of sea-anemones; this, however, is somewhat of a fallacy, for Apothecaries' Hall, where resides Mr. Warington, the inventor, perfecter and maintainer of the aquarium, is situated in exactly such a locality as the brilliant imagination of a novelist might convert into the Pandemonium described above; and, strange to say, under the skilful management of Mr. Warington, to whom we owe a debt of gratitude never to be cancelled, sea-anemones and all the other "strange forms of the deeps" live and increase their kind, and enjoy the most exuberant health and spirits that can fall to the lot of

mortal polyp: *ergo*, the grandiloquent passage, of which the mere peroration is cited above, is as inapplicable to the real state of the case as it is out of place in a work professing to teach Natural History.

These errors of judgment, the introduction of the too abstruse and the too grand, are the more to be regretted, because the little book is conceived in a happy vein, and produced under every advantage of circumstance. The "table of contents" speaks for itself: here it is—

"Introduction. Chapter I. What is a Sea-Anemone? II. Where is it to be found? III. What is its name? IV. How can I keep it alive? V. What will it do when I have got it? VI. Supplementary and Critical: On the Distinctions of Genera and Species. Appendix I. Specimen of a Naturalist's Diary. II. Habitats of Actiniæ. III. Glossary of Hard Words."

This is not only attractive in the letter, but is carried out in the spirit to a certain degree. There is only the want of a little "judgmental" pruning and arrangement; the too learned, the too familiar, the too grand, should be carefully cut away, and much more of the descriptive and practical might be advantageously introduced. The appearance of the book is faultless, and the plates, excepting the frontispiece, are very beautiful. Even the exception of the frontispiece may perhaps be unnecessary, by showing that it represents a species with which we, the reviewer, are unacquainted; but it unfortunately bears the name of the most familiar and most elegant of all the tribe, *Actinia Dianthus*, and to this it has no resemblance: the name of *Dianthus* is, in all probability, generally applied in error; but, if so, the species bearing that name should also have been figured: what can be more exquisitely beautiful than the undulating outline of its fringe of tentacles in the *Dianthus* commonly so called?

May the reviewer be allowed to recommend to the author a careful perusal of Kirby and Spence's 'Introduction to Entomology'; by the time he has mastered that model of Introductions a second edition of the 'Manual' will doubtless be required, and it may be greatly improved by some assimilation to that most learned, most unassuming, most fascinating volume. The author of the 'Manual' has chosen a capital subject, and the best time for its publication; he has, moreover, the advantage of being assisted by the pencil of a well-

skilled naturalist. The reviewer has only to add—1st, that this beautiful book has been placed in his hands, under the impression that, having made the sea-anemone his especial study in one of those localities so brilliantly described by the author as “one of the plague-courts of London,” he would make a competent reviewer of ‘A Manual of Sea-Anemones;’ and, 2ndly, that he sincerely wishes that both Mr. Tugwell and Mr. Kingsley would visit the scenes of their glowing descriptions, and lend their aid in the improvement of much that is really wrong, though not precisely as their brilliant imaginations paint it. What a contrast between their lives and ours!

PHILACTINIA.

‘*Tenby: a Sea-side Holiday.*’ By PHILIP HENRY GOSSE, A.L.S.
8vo, 400 pp. letterpress; 24 coloured plates. Price 21s.
London: Van Voorst. 1856.

Mr. Gosse is beyond all comparison the most voluminous writer on Natural History among the present generation of men: his powers are as inexhaustible as his subject. Volume follows volume with a rapidity that is marvellous; and the last has always the rare merit of appearing the best. What, it will be asked, is there peculiar to Tenby that it should require a book to itself? How does it differ from other sea-sides described in the ‘Devonshire Coast’ and the ‘Aquarium?’ To say truth, it is not the locality that differs; it is that this babbling of sea things is found to be pleasant, and doubtless profitable, and this shifting of the scene—this resemblance of novelty—is as necessary as the introduction of new plates and the compilation of new descriptions.

The titles have little to do with the contents, and the books might just as well be intituled

“One, Two and Three
Tales of the Sea,”

as bear the names by which they are now known: they are as like as three peas from the same pod.

This Tenby volume contains “a detailed record of a summer holiday spent at Tenby. Nearly every day’s occupation is set down just as it occurred; tide-pool explorations, cavern searchings, microscopic examinations, scenery hunttings, road-side pryings,—here they all are, a faithful narrative of how the author was engaged for about six weeks at that pleasant little watering-place.”

Like its predecessors 'Tenby' contains a vast amount of good Natural-History information: possessed of infinitely more knowledge of these sea things than any other writer who has hitherto attempted to describe them, the author still steers clear of technicalities and pedantries; gifted with an easy flow of words and a remarkable elegance of expression, the author still avoids "fine writing," that bane of authorship. In the present volume, moreover, the introduction of doctrinal religion is avoided, while the presence of a religious feeling is still sufficiently prominent. Taken as a whole, this is the best of the three books, and we have only to regret having so long delayed to notice it. Even now our space is too limited to do it justice by making such quotations as must lead the reader to procure the book itself. Should, however, an opportunity occur, we shall hereafter transfer some few delightful passages from the pages of 'Tenby' to those of the 'Zoologist,' and this not simply and purely from a desire to promote the sale of 'Tenby,' but because we feel certain that it would be instructive to most of our readers and delightful to all of them.

Corrections of Errors.—I shall feel much obliged if you will correct my mistake (Zool. 5316) in giving "Turdus migratorius" as the name of the robin redbreast, and substitute for it "Sylvia rubecula," the former being the name of the American thrush (*vulg.* robin); also, in p. 5313, 13th line from bottom, for "Forida Europa" read "Fonda Europa."—Charles W. Watkins; Badby House, Daventry, November 1, 1856.

Errata.—Page 5214, line 30, for "forcibly hoped" read "fondly hoped"

" —, " 31, omitting "of" read "there glared still in view the malignant form"

" 5269, " 18, for "marmots" read "marmot"

" 5271, " 22, for "unpractical" read "unpractised"

" 5272, " 10, for "Reuss," read "Reuss;"

" 5274, " 11, for "bird" read "kind"

" 5276, " 8, for "rang" read "ranz"

" —, " 38, for "Manerklette" read "Mauerklette"

" —, " —, for "Manerlaufer" read "Mauerlaufer"

" 5277, " 1, for "hawking" read "haunting"

" —, " 5, for "Dranee" read "Drance"

" 5294, " 17. Laphygma. The first recorded British specimen

was taken, I believe, by Mr. Maitland, and is noticed in an Addendum to Henry Doubleday's 'Synonymic List,' at p. 27, under the name of *Caradrina exigua*.—E. N.





